A paper prepared for the

Economic Council of Canada

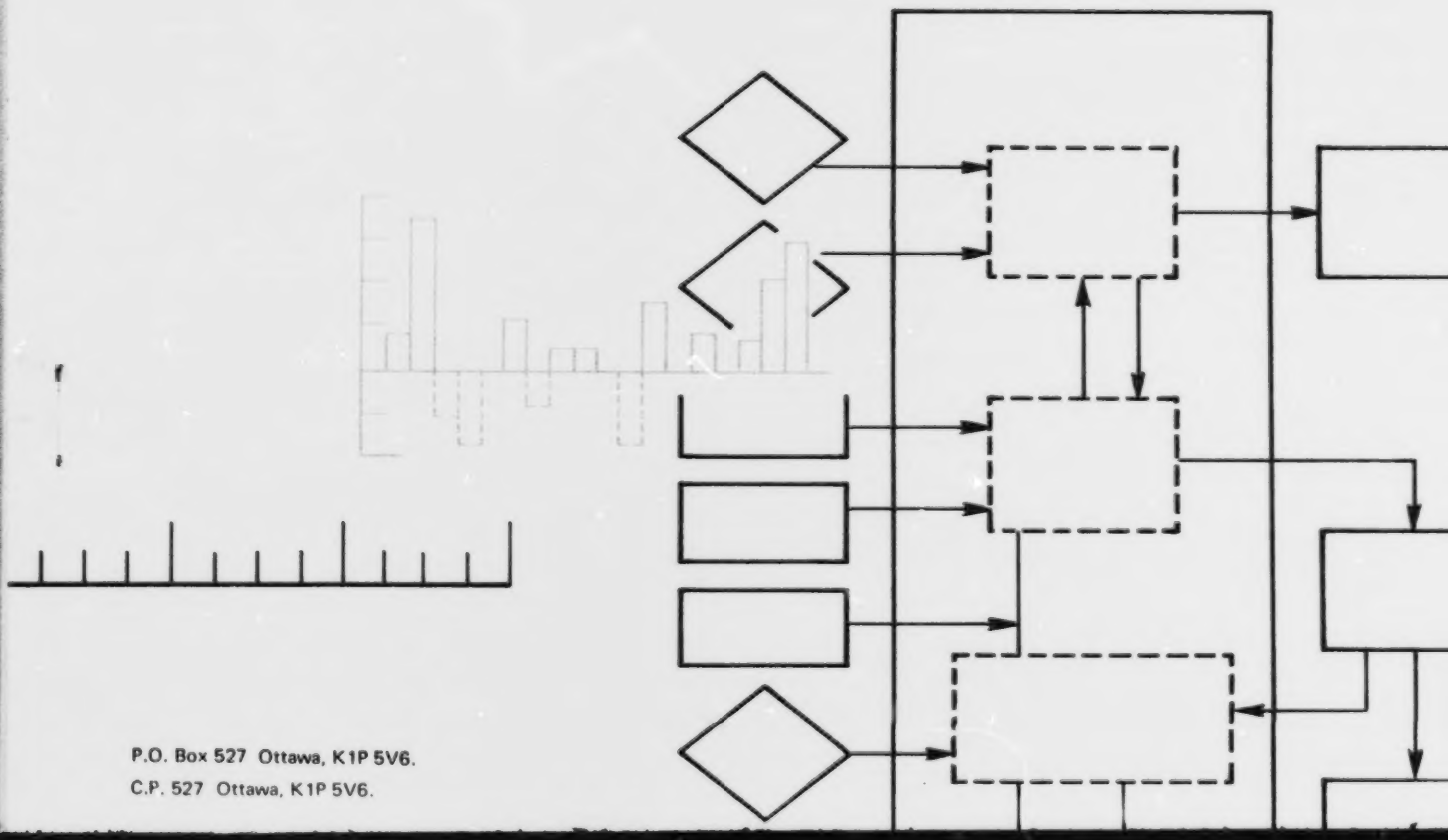
DISCUSSION PAPER NO. 226

Canada's Capital Stock

by Gordon J. Garston

Un document préparé pour le

Conseil économique du Canada



P.O. Box 527 Ottawa, K1P 5V6.
C.P. 527 Ottawa, K1P 5V6.

The **Economic Council of Canada** was established in 1963 by Act of Parliament. The Council is a crown corporation consisting of a Chairman, two Directors and not more than twenty-five Members appointed by the Governor in Council.

The Council is an independent advisory body with broad terms of reference to study, advise and report on a very wide range of matters relating to Canada's economic development. The Council is empowered to conduct studies and inquiries on its own initiative, or if directed to do so by the Minister, and to report on these activities. The Council is required to publish annually a review of medium- and long-term economic prospects and problems. In addition it may publish such other studies and reports as it sees fit.

The Chairman is the Chief Executive Officer of the Council and has supervision over and direction of the work and staff of the Council. The expenses of the Council are paid out of money appropriated by Parliament for the purpose.

The Council as a corporate body bears final responsibility for the *Annual Review*, and for certain other reports which are clearly designated as *Council Reports*. The Council also publishes *Research Studies*, *Discussion Papers* and *Conference Proceedings* which are clearly attributed to individual authors rather than the Council as a whole. While the Council establishes general policy regarding such studies, it is the Chairman of the Council who bears final responsibility for the decision to publish authored research studies, discussion papers and conference proceedings under the imprint of the Council. The Chairman, in reaching a judgment on the competence and relevance of each author-attributed study or paper, is advised by the two Directors. In addition, for *authored Research Studies* the Chairman and the two Directors weigh the views of expert outside readers who report in confidence on the quality of the work. Publication of an author-attributed study or paper signifies that it is deemed a competent treatment worthy of public consideration, but does not imply endorsement of conclusions or recommendations by either the Chairman or Council members.

Établi en 1963 par une Loi du Parlement, le **Conseil économique du Canada** est une corporation de la Couronne composée d'un président, de deux directeurs et d'au plus vingt-cinq autres membres, qui sont nommés par le gouverneur en conseil.

Le Conseil est un organisme consultatif indépendant dont le mandat lui enjoint de faire des études, donner des avis et dresser des rapports concernant une grande variété de questions rattachées au développement économique du Canada. Le Conseil est autorisé à entreprendre des études et des enquêtes, de sa propre initiative ou à la demande du Ministre, et à faire rapport de ses activités. Chaque année, il doit préparer et faire publier un exposé sur les perspectives et les problèmes économiques à long et à moyen termes. Il peut aussi faire publier les études et les rapports dont la publication lui semble opportune.

Le président est le directeur général du Conseil; il en surveille les travaux et en dirige le personnel. Les montants requis pour acquitter les dépenses du Conseil sont prélevés sur les crédits que le Parlement vote à cette fin.

En tant que personne morale, le Conseil assume l'entière responsabilité des *Exposés annuels*, ainsi que de certains autres rapports qui sont clairement désignés comme étant des *Rapports du Conseil*. Figurent également au nombre des publications du Conseil, les *Études*, *Documents* et *Comptes rendus de colloques*, qui sont explicitement *attribués à des auteurs particuliers* plutôt qu'au Conseil lui-même. Celui-ci établit une politique générale touchant ces textes, mais c'est au président qu'il incombe de prendre la décision finale de faire publier, sous les auspices du Conseil économique du Canada, les ouvrages à nom d'auteur tels que les études, documents et rapports de colloques. Pour se prononcer sur la qualité, l'exactitude et l'objectivité d'une étude ou d'un document attribué à son auteur, le président est conseillé par les deux directeurs. De plus, dans le cas des *études à nom d'auteur*, le président et les deux directeurs sollicitent l'avis de lecteurs extérieurs spécialisés, qui font un rapport confidentiel sur la qualité de ces ouvrages. Le fait de publier une étude ou un document à nom d'auteur ne signifie pas que le président ou les membres du Conseil souscrivent aux conclusions ou recommandations contenues dans l'ouvrage, mais plutôt que l'analyse est jugée d'une qualité suffisante pour être portée à l'attention du public.

DISCUSSION PAPER NO. 226

Canada's Capital Stock

by Gordon J. Garston

The findings of this Discussion Paper are the personal responsibility of the authors and, as such, have not been endorsed by members of the Economic Council of Canada.

Discussion Papers are working documents made available by the Economic Council of Canada, in limited number and in the language of preparation, to interested individuals for the benefit of their professional comments.

Requests for permission to reproduce or excerpt this material should be addressed to:

Council Secretary
Economic Council of Canada
Post Office Box 527
Ottawa, Ontario
K1P 5V6

ISSN-0225-8013

February 1983

Résumé

Toute analyse de la productivité, de la compétitivité et de la croissance économique doit être effectuée à partir de mesures statistiques fiables de la production et des coûts, ainsi qu'à l'aide de données sur les flux et les stocks de capital fixe reproductible. Sans de telles mesures, les politiques mises en oeuvre dans les secteurs public et privé en vue de stimuler la croissance et d'améliorer la compétitivité et la productivité ne pourraient être conçues, formulées et évaluées qu'avec grande difficulté.

Dans le présent rapport, l'auteur évalue la base des données statistiques disponibles concernant le stock de capital du Canada, et en examine la méthodologie et les concepts sous-jacents. Il présente d'abondantes données sur les prix en dollars courants et constants ayant eu cours dans le passé, et d'autres renseignements concernant les flux de capitaux et les stocks tant résidentiels que non résidentiels. Les données non résidentielles contenues dans le rapport portent sur les industries, les provinces, les diverses catégories d'avoirs, la durée utile des installations de service, la durée moyenne des avoirs, les prix, la location et les baux, la lutte contre la pollution et les coûts qu'elle engendre, la propriété étrangère des avoirs fixes canadiens, et d'autres caractéristiques

semblables. Les données sur les logements comprennent des ventilations par province. Il y est question des caractéristiques telles que le genre d'habitations, la propriété, les prix, ainsi que les loyers réels et imputés. Bien que ces données soient tirées de plusieurs sources, la plupart proviennent de diverses divisions administratives de Statistique Canada, la Division de la construction en particulier ayant fourni une foule de renseignements précieux.

L'auteur analyse les faits saillants des données présentées dans le rapport. Il étudie les principales relations, les tendances et les taux de croissance, et ajoute des commentaires sur la qualité et la fiabilité des séries statistiques examinées.

La base de données sur les flux et les stocks de capitaux fixes du Canada est d'une richesse impressionnante. Il reste cependant de sérieuses lacunes à combler et des incohérences à corriger; l'auteur expose ici les problèmes qu'elles suscitent et formule un certain nombre de recommandations à cet effet.

Abstract

The analysis of productivity, competitiveness, and economic growth requires reliable statistical measures for production and production costs including data for the flows and stocks of reproducible fixed capital. Without such measures the understanding, formulation and success of private and public policy to stimulate growth and increase competitiveness and productivity will be handicapped and the analysis of progress uncertain.

This report evaluates the available statistical data base relating to Canada's capital stock in addition to reviewing underlying concepts and methodology. A broad range of historical current and constant price and other related data are presented for both non-residential and residential capital flows and stocks. Non-residential data contained in the report encompass industries, provinces, asset classes, services lives, average life of assets, prices, rentals and leasing, pollution abatement and control costs, foreign ownership of Canadian fixed assets, and a number of other related and specific characteristics. Residential data presented include provincial breakdowns, types of dwelling, ownership, prices and paid

and imputed rents. While the data presented are drawn from a broad range of sources, most of it originates with various Divisions of Statistics Canada -- the Construction Division in particular provided a wealth of information.

An analysis is done of the highlights of the data contained in the report. Important relationships, trends and growth rates are discussed and comments are made concerning the quality and reliability of the statistical series being examined.

The richness of the data base relating to Canada's fixed capital flows and stocks is substantial. However, there are some serious gaps and inconsistencies remaining. The problems arising from these are discussed in the report and a number of recommendations are made.

Table of Contents

		Page
1.	Introduction	1
2.	Fixed Capital Flows and Stocks	3
	(a) Definition and Scope	3
	(b) Methodology	5
	(i) Current Price Measures	7
	(ii) Constant Price Measures	10
	(iii) Price Indexes	14
	(c) The Measurement of Quality	18
	(d) Other Measurement Problems	21
3.	Some Characteristics of Canada's Fixed Capital	27
	(a) Industrial Distribution	27
	(b) Asset Classes	29
	(c) Regional Distribution	30
	(d) Service Lives (economic and tax)	31
	(e) The Rental of Fixed Assets	32
	(f) Pollution Abatement and Control	35
	(g) Investment by Country of Control	39
	(h) Other Capital Related Data	40
	(i) Housing Stocks and Rents	41
	(j) The Vintage of Canada's Fixed Capital Stock	43
4.	Summary and Conclusions	103
	(a) Results	103
	(b) Remaining Gaps in Knowledge	112
	(c) Direction of Further Work	116

List of Tables

Table 2.1 An Example of Price and Quality Measurement

Table 3.1 Fixed Capital Flows and Stocks, Excluding Housing, Canada, 1926-1981

Table 3.2 Mid-year Gross Fixed Capital Stock (Excluding Housing) Manufacturing Major Industry Groups, 1926-1981

Table 3.3 Mid-year Gross Fixed Capital Stock (Excluding Housing) Manufacturing, Individual Industries, Selected Years 1955-1981

Table 3.4 Mid-year Gross Fixed Capital Stock (Excluding Housing) Non-manufacturing Industries, 1926-1981

Table 3.5 Gross Fixed Capital Stock (Excluding Housing) by Asset Classes, All Industries, 1926-1981

Table 3.6 Gross Fixed Capital Stock (Excluding Housing) by Asset Classes, Manufacturing and Non-manufacturing, 1926-1981

Table 3.7 Provincial Non-residential Gross Stock, All Industries, Manufacturing and Non-manufacturing, Selected Years (millions of 1971 constant dollars)

Table 3.8 Service Lives in Years of Fixed Capital Assets in Manufacturing and Non-manufacturing Industries

Table 3.9 Class of Property and Schedule of Capital Cost Allowance Rates, 1979

Table 3.10 Demand Distribution of Gross Rents, 1976

Table 3.11 Industries Paying and/or Receiving Gross Rents in Excess of $10 Million 1976 (Input-Output Table Commodity Class 55,900 Only)

Table 3.12 Industries Paying Gross Rents (Intermediate Inputs) in Excess of $10 Million in 1971 Constant Prices (1971-1977)

Table 3.13 Industries Receiving Gross Rents in Excess of $10 Million in Constant 1971 Prices (1971-1977)

Table 3.14 Net Leases Written by Contract Term

Table 3.15 Corporation Ownership, 1979

Table 3.16 Finance Leasing by Type of Equipment, 1978 and 1979

Table 3.17 Finance Leasing by Province, 1978 and 1979

Table 3.18 Selected Financial Intermediaries Lease Contracts Receivable and Revenue, 1978 and 1979 by Quarters ($000,000)

Table 3.19 Accumulated Capital Expenditures by Province for Water and Air Pollution Control, 1970-1975

Table 3.20 Accumulated Capital Expenditures by Industry for Water and Air Pollution Control, 1970-1975

Table 3.21 Percentage Share of Accumulated Capital Cost for Water and Air Pollution Control, 1970-1975, by Industry

Table 3.22 Capital Cost Allowances by Tax Class for Selected Industry Groups, 1972, 1975 and 1978 ($'000,000)

Table 3.23 Pollution Abatement Expenditures by Large Firms, 1977-1981

Table 3.24 Selected United States Pollution Abatement and Control Expenditures 1972-1976

Table 3.25 Capital Expenditures by Country of Control for Selected Industries, 1969-1980

Table 3.26 Capital Expenditures by Country of Control, by Selected Provinces for Manufacturing, 1976-1980

Table 3.27 Foreign Long-term Direct Investment in Canada, 1949-1980

Table 3.28 Selected Capital Stock Related Data for Agriculture

Table 3.29 Forest Lands in Canada, 1976-1977 (thousands of square kilometres)

Table 3.30 Number of Canadian Vessels Involved in Marine Fisheries by Tonnage, 1963-1976

Table 3.31 Road and Highway Mileage in Canada, 1950-1976

Table 3.32 Miles of Oil and Natural Gas Trunk Pipelines, 1950-1979

Table 3.33 Electric Transmission Circuit Mileage by Power Line Voltage, 1956-1978

Table 3.34 Electric Transmission Circuit Mileage by Power Line Voltage by Province, 1978

Table 3.35 Railroad Motive Power and Rolling Stock, 1950-1979

Table 3.36 Number of Registered Motor Vehicles, 1940-1979

Table 3.37 Number of Dwellings in Canada, 1949-1980, by Type and Ownership

Table 3.38 Number of Dwellings in Canada and the Provinces by Type and Ownership, Percentage Change 1949 to 1980 (year-end number of dwellings)

Table 3.39 Percentage Composition of Type of Dwellings in Canada, 1949 and 1980

Table 3.40 Mid-Year Net Stock of Housing, Canada and the Provinces, 1949-1981

Table 3.41 Canada's Housing Stock by Province, Percentage Change in Levels of Gross Fixed Capital Formation and Net Stocks, 1949-1981

Table 3.42 Residential Gross Rents, 1949-1980

Table 3.43 Average Age of Canada's Non-Residential Capital Stock, Construction Component, by Industry, Selected Years

Table 3.44 Average Age of Canada's Non-Residential Capital Stock, Machinery and Equipment Component, by Industry, Selected Years

Table 4.1 Percentage Increase in Constant Price Provincial Gross Fixed Capital Stock, Excluding Housing, 1955-1981

1. Introduction

In order to identify sources of economic growth and to analyse changes in productivity it is essential to have reliable measures of fixed capital flows and stocks. It is particularly important to have good measures of gross fixed capital stock and to know the characteristics of this stock in terms of industrial and regional location, type of fixed asset involved, where the control of stock is held, whether it is rented or owned, what it is used for, its age, how long it might be expected to remain economically useful, stock devoted to negating environmental damage, and so on.

This report attempts to describe and summarily present the basic fixed capital flows and stocks data for Canada's industries and economic regions. As well it assembles and presents some of the available related data such as housing stocks and rents, asset leasing, pollution abatement costs, country of control of investment and asset service lives. Many of these related data series are incomplete as to coverage and/or time and are generally inconsistent with the non-residential fixed capital flows and stocks data. Nevertheless these latter data are presented in the belief that they add a useful dimension to the analysis and understanding of Canada's capital stock.

The report concentrates on the most common definition of capital. Other types of capital such as consumer durables, investment in human health and education, basic research, natural

resources and financial capital are entirely omitted even though they undoubtedly affect growth and productivity.

Section 2 discusses the definition and scope of capital as used in this report as well as the methodology used in its measurement and the general quality of the measures. Section 3 presents some of the available statistical data relating to the gross fixed capital flows and stocks such as industrial, regional and asset class detail as well as a range of related statistical data such as housing, pollution abatement costs, leasing, ownership, and service lives. Section 4 briefly reviews some of the results and problems encountered. As well some of the more important gaps in our knowledge are noted and an indication of future desirable statistical development is presented.

2. Fixed Capital Flows and Stocks

Considerable controversy surrounds the concept of capital and the methodology used in deriving reliable and consistent statistical measures of capital flows and stocks. Even when the scope of the measures is reduced to more manageable proportions, as in the restriction to fixed reproducible capital, there are very difficult data, methodological and conceptual problems to be resolved or minimized.

In spite of the controversies and problems surrounding the measurement of capital the importance of deriving such measures has never been in doubt. Reliable measures are essential to an understanding of such phenomena as economic growth and technological progress, investment, the growth of income and wealth, and competitiveness.

The purpose of this section is to review briefly the measures of fixed capital flows and stocks that are presently available for Canada.

(a) Definition and Scope

Capital is most generally defined as including produced means of production such as nonresidential and engineering structures, machinery and equipment, housing and, as in the case of national income accounting, inventories. Some economists would like to

extend the scope of capital measurement to include all or at least a wide range of factors of production. Kendrick[1] expands his concept of capital to include the "capacity to produce output and income (including nonmarket income) over a succession of accounting periods." In keeping with this broad concept of capacity, he develops estimates of capital that include consumer durables, the accumulated costs of investment in humans such as their upbringing, education and training, health and safety, and mobility costs. He also includes intangible non-human stocks such as basic research and other research and development expenditures.

Soliday,[2] makes an imputation to include sub-soil assets -- specifically developed resource stocks of oil and natural gas. In an earlier comprehensive study,[3] capital is broadly defined as "the wealth of a nation consists of all resources which contribute to the production of goods and services that men want". However, at that time, as a practical matter, the study group confined itself "to nonhuman, tangible resources, and financial claims". In the United Kingdom, Patterson and Schott[4] in summarizing a conference on the measurement of capital held in 1976 at the University of Southhampton, note that all "concepts of capital in economic theory are intimately related, in one way or another, to the idea of income creation" and conclude that "to accord with the idea of income creation these statistics should encompass tangible and intangible assets whether socially or privately owned."

The mainstream of capital definition concerns itself with the idea of long-run production capacity. This concept is the basis of most country statistics of capital stocks. Other definitions of capital stocks such as "instantaneous productive capacity",[5] "accumulated consumption foregone",[6] and "real wealth, i.e., the present value, at some given time series of interest rates, of the stream of consumption goods earned by the existing stock of capital goods",[7] will not be reviewed in this report.

For purposes of this study, the scope of capital measurement is confined to the stock of physical assets used in the production process whether owned by governments, business, institutions, or persons. This stock of physical assets or fixed assets (or more precisely, fixed reproducible tangible capital assets), includes building construction, engineering construction, machinery and equipment, and capital items charged to operating expense.

(b) Methodology

In deriving measures of fixed capital stocks it is considered possible to proceed in two different ways. One way is by direct survey of the owners of capital goods in order to derive a current market value of these goods. The other way, and the one generally used, is to construct stock data using a combination of investment data, asset life, and relevant price data.

The direct survey approach is the most appealing in the sense that it would appear to be the simplest and easiest. However, very few owners of fixed capital assets know the current market value of their assets. Usually such assets are carried on books of account at original cost only and thus accumulating asset values from this source results in a mixture of original cost values which, over time, become useless as a measure of market value, unless of course there are no price changes in new capital goods over time and no markdown of value due to depreciation or obsolescence. Since these latter conditions do not exist and there is generally no ready market for second-hand capital goods, there is no practical way to apply the direct-survey approach to collecting consistent time series for fixed capital stocks. To insist on doing so would impose an unreasonable response burden on the owners of capital goods in that each asset would have to be separately recorded and correspondingly detailed price (asset cost) measures estimated. Even if this could be done, there would be problems in measuring wear, tear and obsolescence. Because of the need for so much detailed data which are not readily available from owners of fixed capital assets, the direct survey approach is rarely used.

Most industrialized countries including Canada,[8] the United States,[9] and the United Kingdom,[10] have developed their official measures of capital stock by combining investment data, asset life assumptions and relevant price data. The remainder of

this section will concentrate on the official measures for Canada.

(i) Current Price Measures

The derivation of a current price measure of the stock of fixed reproducible capital by Statistics Canada is based on what is called the "perpetual inventory" method. This method of measuring the stocks of fixed capital rests on three basic sets of data:

-- historical time series of current price gross fixed capital formation for similar types of capital goods purchased;
-- relevant price indexes; and
-- estimates of average life for the capital goods purchased, i.e., the average length of time a capital good is normally economically useful before it wears out or becomes obsolete.

In applying the perpetual inventory method it is necessary to have data for expenditure on new capital goods over a period of many years corresponding at a minimum to the average life of the capital asset involved. The essence of the approach to a gross fixed capital stock measure is to accumulate in current price terms the cost of new (to the purchaser) capital goods purchased each year until the average age of the first year's stock is the same as the estimated average life for that class of asset. Subsequent years are estimated by dropping the beginning year and

adding a year to the end of the series. For example, a capital good with an average economic life of five years would require current price purchases for years 1 to 5 inclusive to derive an aggregate or gross stock value at the end of period 5. The value for period 6 would be derived by dropping the purchase value of period 1, fixed capital goods, and adding those purchased in period 6, and so on. No deductions are made for wear, tear and obsolescence in deriving the gross stock measures.

It should be noted that to simply add current price expenditure on capital goods each year will give rise to a dollar aggregate in original (purchase price) cost dollars and, given price changes, will result in an accumulated dollar value of gross stocks comprised of dollars of different real worth. In order to express the expenditure and stock aggregates in consistent current price terms it is necessary to first deflate the expenditure data using appropriate price indexes. This is accomplished by choosing a particular year as a base or reference year and expressing the price index to be used in terms of that year equalling 100. Each year's expenditure is then deflated using the corresponding year's price index. Thus each year's expenditure gets expressed in terms of the prices of the base year and can be added to yield a gross stock aggregate, also expressed in terms of the prices of the base year. Current price gross stock values are then derived by multiplying the deflated and aggregated values (constant price values) by the corresponding year's price index to obtain a current price evaluation of

the gross capital stock. By following this procedure, all items in the gross stock in each year are consistently revalued in the prices of that year and are no longer a mixture of so-called original prices.[11]

The gross fixed capital formation data (or gross investment data) relating to the value of new fixed capital goods purchased that are used in the above calculation, are derived from the Statistics Canada report "Private and Public Investment in Canada".[12]

One final adjustment is made to the current price gross stock numbers to centre them on mid-year as opposed to the year end. This is accomplished by simply adding the year's beginning stock (previous year's end-of-year gross stock) to the end of the year stock and dividing by two. This calculation is done to the constant price data prior to multiplying it by the year's price index to derive the current price value of the gross stock.

For some purposes, a current price net stock value is required for each year. Net stocks are gross stocks less deductions of losses in value through physical deterioration (wear and tear), aging and obsolescence, usually referred to as capital consumption allowances. As described earlier, each capital asset is assumed to have an average service life equal to its useful economic life. At the end of this time period the asset is "retired" or written off as having no further economic value.

Capital assets are depreciated on a straight-line basis[13] so that each year's depreciation (or capital consumption allowance) is equal to its gross value divided by its service life. In the example of an asset with a five-year service life, the amount charged off to depreciation each year would be one-fifth of the asset's constant price gross stock value multiplied by the relevant price index for that year.

(ii) Constant Price Measures

The basic methodology used in deriving constant price, i.e., the quantity, of gross fixed capital formation, gross fixed capital stocks, capital consumption allowances, and net fixed capital stocks has been described above in discussing the derivation of current price measures. The constant price values are those values in the current price calculation derived just prior to revaluation to current prices by multiplying the centred-to-mid-year constant price aggregates by the relevant price index for that year. Thus the methodology is reasonably straightforward. To reiterate -- each year's investment in new fixed assets (including imported capital goods and major alterations to existing capital goods) is classified by type, and the original dollar value of each type is re-expressed in terms of the prices of some year chosen as a base year by deflating this original value using an appropriate price index having the same base year as a weight base or reference year. These constant price or quantity aggregates are then summed over the estimated

average economic life of the particular asset type tc yield a time series of gross fixed capital stock. These resultant year-end constant price gross stock values are then centred on mid-year by means of a two-term moving average to yield the needed quantity measure of gross fixed capital stock. Where an industry or provincial quantity measure is required, the process of derivation is simply carried out using that level of detail, assuming of course that the original investment surveys collected the appropriate industry and provincial detail.

Constant price capital consumption allowances are calculated using the straight-line method described earlier and the resultant constant price data deducted from the quantity of gross fixed capital stock to yield constant price net fixed capital stock.

The accuracy and usefulness of the offical constant price capital measures depend heavily on the accuracy of the investment survey data, economic life estimates, relevant price indexes and, of course, the particular concept of capital measured.

The reports on Private and Public Investment in Canada: Outlook, published by Statistics Canada, outline these particular source data, as does Fixed Capital Flows and Stocks, Manufacturing, 1926-1960.[14] These data are generally considered to be of very good quality, especially from 1946 when the basis of reporting was changed from the firm or legal corporate entity to

the establishment. This latter point is particularly relevant to the accuracy and consistency of the measures for industries. Also, survey coverage was greatly improved beginning in 1946. Because of the very long economic life of some capital goods, gross fixed capital formation data have had to be estimated back into the late 1800's and early 1900'S. These early estimates for manufacturing industries are fully discussed in catalogue no. 13-522 referred to above.

The estimates of average economic life are perhaps the weakest part of the stock estimates. Average life data are taken from a number of sources, including a 1949 study by the then Department of Trade and Commerce,[15] the United States Treasury Department's Bulletin "F",[16] and from internal Statistics Canada estimates based on indirect information obtained through the Census of Manufactures for the 1926-1943 period. Because there has never been a properly designed survey of economic life data and because the presently used data are to a large extent based on indirect evidence or very old United States information, the "average economic life" data used in the capital stock measures must be regarded as highly suspect.[17] Fortunately, in the case of gross fixed capital stock, the average life assumptions used are more likely to seriously affect the dollar value levels than the changes in these levels over time. Still, this could have serious implications for growth and productivity studies.

Methodology and problems associated with the price data used in deriving the constant price capital stock estimates will be discussed in the following section. Before doing so it may be useful to discuss briefly the concept of capital used.

The concept of capital underlying the official stock estimates is that of capital measured by its cost. This concept of capital measured by its cost has generally been attributed to Denison[18] and is defined by him as follows:

> "The value, in base period prices, of the stock of durable capital goods (before allowance for capital consumption) measures the amount it would have cost in the base period to produce the actual stock of capital goods existing in the given year (not its equivalent in ability to contribute to production). Similarly, gross additions to the capital stock and capital consumption are valued in terms of base year costs for the particular types of capital goods added or consumed. This must be modified immediately, in the case of durable capital goods not actually produced in the base year, to substitute the amount it would have cost to produce them if they had been known and actually produced. But a similar modification is required in all deflation or index number problems."

For individual industries it would be desirable to modify gross additions to capital stock to include all purchases of fixed capital goods but to deduct any sales of new and existing fixed capital goods. This adjustment is not possible at the present time. Thus used assets[19] are deemed to remain with the original purchaser even if sold. Fortunately most sales of used fixed assets are made within the same industry.

A similar problem exists for both the constructor and user of capital stock measures in relation to owning and using industries. Capital investment and, hence capital stock, now gets measured in the capital-owning industry. Where leasing of capital assets is important, either as the lessor or the lessee industry, the official capital stock measures may be seriously affected.

There are a few other more minor problems associated with the stock measures. Among these is the lack of information on discards due to damage and other losses as well as to technological obsolescence. Another problem relates to the distinction between major replacements and the replacement of small parts and repairs normally charged as current expenses.

(iii) Price Indexes

The price indexes used to deflate the fixed capital goods data are published in Section 2 of the Statistics Canada publications Fixed Capital Flows and Stocks.[20] These price series are presented by industry with three components or asset types for each industry, namely, building construction, engineering construction, and machinery and equipment. Aggregate price indexes are also published for total construction and for the total of all three components.

Ideally, the value for each individual type and variety of capital good should be separately recorded and deflated with a price index (relative) that specifically matches that particular item. This would in effect require detailed quantities and values of capital stock and is an impractical goal to achieve. The next best approach is to obtain representative prices drawn from a sample of the quantities to be priced and to combine the resultant price relatives using base period quantities (values) as weights. In the former approach, and using nonresidential building construction as an example, it would be necessary to obtain values and corresponding prices for each of the many varieties, sizes, styles, etc., of nonresidential buildings purchased by a particular industry. Since this is considered to be impossible, the next best approach would be an attempt to price representative items of building construction and to use these prices as proxies for other building construction, not specifically covered, by assigning the weight (values) of uncovered building construction to the price series actually available. This latter approach is the one normally used in constructing price indexes. Unfortunately this approach is not yet used in deflating construction-type fixed capital asset investment values.

Instead, it has been necessary to go back one further step and to use a combination of input prices. In this approach representative material inputs are priced and combined using input quantity weights. This material input price index is then

combined with a labour cost index and an index of miscellaneous costs (gross profit margins). The labour price index is adjusted for productivity, using as a proxy the relationship between the quantity of material inputs and the number of workers.

Input based price indexes for output value deflation must be viewed with some suspicion, even if an effort is made to correct for changes in profit margins and for material input/worker relationships. The additional weighting of these input price (cost) series by types of structure such as factories, churches, schools, etc., does not overcome the basic problem of using input price measures to deflate investment expenditures.

Price indexes are prepared for four general categories of engineering-type capital expenditures, namely, non-residential general engineering, railway engineering, highway construction, and electric utilities construction. The first of these, non-residential general engineering, is calculated in the same manner as the building construction series described above. The railway engineering and electric utilities construction series are based on material and labour costs only, with no adjustments for productivity or profit margins being made. The highway construction price index is based on units of construction work put in place, using actual bid prices on contracts let to indicate the movement of final product prices. This latter index then is the only output-based price index used.

The basic data used in combining the material, labour and gross profit margins (where applicable) are derived from Construction in Canada reports.[21] The same source is used to derive labour cost (wage rate) indexes by dividing the wage and salary bill by the number of employee-years worked. Material prices are prepared by special weighting of selected selling price indexes.[22]

Price indexes used to deflate machinery and equipment components of gross fixed capital formation are based on end-product prices paid by Canadian business and government purchasers. These prices include both imported and domestically produced machinery and equipment. The import portion is based on United States wholesale prices adjusted for import duties and exchange rates. These machinery and equipment price indexes are prepared in considerable industrial detail by the Prices Division of Statistics Canada.

It is unfortunate that selling price indexes are not available for the construction-type goods that constitute various classes of gross fixed capital formation.[23] The use of input price indexes and especially the addition of profit margins and productivity-adjusted wage rates, introduce an unknown amount of ambiguity into the resultant constant price gross fixed capital stock data. Normally in price index preparation an attempt is made to remove from the reported price change the change in costs associated with quality change, since quality change is viewed as

a component of quantity change. When such price indexes are used to deflate gross fixed capital formation, only cost-associated quality change will be reflected as a change in real or constant price capital.

(c) The Measurement of Quality

In quantity and price measures of economic production, quality is defined as a component of quantity. In other words, quality is quantity for purposes of economic production measurement. In the case of price index construction every effort is made to eliminate quality from reported prices. However, quality changes that are not associated with cost changes are left in the price indexes and thus, through deflation of value series using these price indexes, excluded from quantity or constant price series. The way in which the quality change problem is handled can have substantial effects on the constant price measures of fixed capital flows and stocks.

By way of further clarification it may help to compare the price and quantity aspects of a group of machines in a factory over a three-year period. In the first year some five identical machines are in use and each produces 2,000 units of output (assuming all are being used to full capacity). If each machine costs $1,000, the base year value of gross capital stocks is $5,000. In the second year five new machines are added. These new machines are more technologically advanced in that they can

each produce 4,000 units of output. However, they cost the same as the first year's machines, namely $1,000. each. The improvements made to the new machines by the producer of the machines did not cost anything additional and there were no other costs (price changes). Thus the constant price gross capital stock of new machines is $5,000 in year two and the total accumulated gross stock for the two years is $10,000. In year three an additional five machines are purchased with a capacity to produce 5,000 units of output each. In this case each improved machine costs $1,100, with 100 of this associated with an increase in the cost of producing these new machines -- there being no other price or cost changes involved over the three-year period. Table 2.1 illustrates what happens in years two and three to the price of the machines, to constant price gross capital stock, and to total output in relation to total capital stock.

It can be seen from this very simple example that the increased costs in Year 3 of producing the new machines are not reflected as a price increase but as a quality (quantity) change. Further, the increased productive capacity of the machines is reflected in the output resulting from the use of the capital stock and not in the capital stock itself. To allow the capital stock to reflect the increased efficiency of the machines would defeat the basic purpose of the calculation, namely to measure the "productivity" of the capital stock.

The constant price gross fixed capital formation and stocks thus reflect cost associated quality change. This is in keeping with the concept of capital stated earlier as being "capital measured by its cost" and described more fully by Denison.[24] The result of this is that new and old machines having identical production costs are considered to represent equal amounts of capital.

From all of the above it can be seen that the constant price gross fixed capital stock (and related series of capital formation, capital consumption allowances, and net stocks) measures this concept of capital, albeit somewhat imperfectly. Nevertheless, it is possible to proceed in a very limited manner to disentangle some of the quality aspects of Canada's aggregate capital stock. These quality aspects are, in effect characteristics of the capital stock and are not unlike many of the characteristics normally associated with labour.

In the following section of this report the characteristics of Canada's capital stock that will be examined include the provincial and industrial distributions of the capital stock, average age differences, the extent of capital stock rentals, asset classes, investment trends in terms of ownership of capital assets, and so on. The range of data available for a detailed examination and evaluation of the characteristics of capital stock is quite limited. Still some quantitative conclusions can be reached. These will be discussed in the following section.

(d) Other Measurement Problems

Certain measurement problems have been explicitly noted in the earlier parts of this chapter. Such problems as inadequate price indexes for deflation and uncertainty as to the average economic life of capital goods have been discussed. Some alternative definitions of capital were discussed, especially those that tended to expand the scope of capital measurement. Alternatives to straight-line depreciation are numerous, and some can be calculated for users if they feel they are "better".[25] Problems associated with the treatment (or lack thereof) of sales and purchases of second-hand capital goods have been described, as has the problem of properly identifying major repairs and alterations. Industry classification changes have also created historical discontinuities and distortions in the statistics. The entry of Newfoundland in 1949 resulted in an upward adjustment in that year. Other discontinuity problems arise out of the necessity to rebase (using revised weights) and chain the price indexes used in the calculations. Still other unresolved problems relate to sudden losses or destruction of capital stock due to fire and other eccentricities of nature.

A major unresolved problem that urgently requires solution is that associated with the rental of capital goods. The leasing of such goods to users in other industries and even countries, causes substantial problems for those wishing to use a "users"

concept of capital goods as opposed to the "owners" concept now used in the official statistics.

The indirect use of capital such as the use of public highways by trucks, represents another class of problem in relating output to capital input. The amount of capital cost that should be charged to using industries would be one aspect of this problem.

While the above is an incomplete list of problems associated with the measurement of capital goods and the relating of these measures to economic production series, it does provide some idea of the amount of basic development work still outstanding in this very difficult field of statistics. Some of these issues will be considered again in Section 4 after reviewing available data in Section 3.

Notes

1 Kendrick, John W., The Formation of Stocks of Total Capital. National Bureau of Economic Research, no. 100, General Series, New York, N.Y., 1976.

2 Soliday, John J., "Measurement of Income and Product in the Oil and Gas Mining Industries," The Measurement of Capital (ed., D. Usher). Studies in Income and Wealth, vol. 45, NBER, 1980.

3 Staff report of the "Wealth Inventory Planning Study", Measuring the Nation's Wealth." Studies in Income and Wealth, vol. 29, NBER, December 1964.

4 Patterson, K.D., and Schott, Kerry, The Measurement of Capital, the Macmillan Press Ltd., London, 1979.

5 Diewert, W.E., "Aggregation Problems in the Measurement of Capital;" and Brown, M., "The Measurement of Capital Aggregates: A Postreswitching Problem," The Measurement of Capital. Studies in Income and Wealth, vol. 45, NBER, 1980.

6 Usher D., The Measurement of Capital. Studies in Income and Wealth, vol. 45, National Bureau of Economic Research, New York, N.Y., 1980; and Kendrick, John, W., The Formation of Stocks and Total Capital. NBER, no. 100, General Series, New York, N.Y., 1976.

7 Eisner, R., "Capital Gains and Income: Real Changes in the Value of Capital," The Measurement of Capital. Studies in Income and Wealth, vol. 45, NBER, New York, N.Y., 1980.

8 Official measures for Canada are described by T.K. Rymes in considerable detail in Fixed Capital Flows and Stocks, Manufacturing, Canada, 1926-1960, Dominion Bureau of Statistics, Cat. 13-522, and more recent issues of Fixed Capital Flows and Stocks, Statistics Canada, Cat. 13-211.

9 For a description of the U.S. measures, see Allan H. Young and John C. Musgrave, "Estimation of Capital Stock in the United States," Measurement of Capital. Studies in Income and Wealth, vol. 45, NBER, New York, N.Y., 1980.

10 The United Kingdom estimates are described in National Accounts Statistics, Sources and Methods, Rita Maurice, Central Statistical Office, London, 1968; and in an article by Tom Griffin in Economic Trends, no. 276, HMSO, October 1976.

11 This procedure is fully illustrated in Table 1, page 44 of Fixed Capital Flows and Stocks. Dominion Bureau of Statistics, Cat. 13-522.

12 Statistics Canada, Cat. 61-205. Excluded are durable goods purchased for personal use and machinery and equipment purchased by the Department of National Defense.

13 There are numerous alternatives to straight-line depreciation, each of which result in a different gross and net stock series. However, the straight-line assumption is generally preferred for practical reasons. The underlying assumption in it is that the services of capital goods acquired at different points in time are perfect substitutes in production.

14 Statistics Canada, Cat. 61-205 and 13-522, respectively.

15 Department of Trade and Commerce, A Study of Depreciation of Machinery and Equipment Containing Estimates of Value of Domestic Disappearance and Average Life Expectancy, 1949.

16 United States Treasury Department, Bulletin "F", "Tables of Useful Lives of Depreciable Property."

17 Service lives actually used by Statistics Canada in its Fixed Capital Flows and Stocks reports are given in Text Table 11, Cat. 13-522.

18 Denison, Edward, F. "Theoretical Aspects of Quality Change, Capital Consumption, and Net Capital Formation," Problems of Capital Formation. Studies in Income and Wealth, vol. 19, NBER, New York, N.Y., 1957.

19 Imported used capital assets are included in the investment of the import purchaser as these capital goods are "new" to the domestic economy.

20 See, Statistics Canada, Cat. 13-568, for historical 1971-based price indexes and 13-211 for the more recent years. For a fuller discussion of sources and other problems associated with the earlier historical record see Cat. 13-522.

21 Statistics Canada, Construction in Canada, Cat. 64-201.

22 For a description of these price indexes, see Industry Selling price Indexes: Manufacturing (1971=100), Statistics Canada Cat. 62-543. See also Construction Price Statistics, Cat. 62-007, and Industry Price Indexes, Cat. 62-011.

23 A practical approach to a solution to pricing the unique goods encountered has been outlined in "Quantity and Price Indexes for Construction," C.M. Jones, G.J. Garston, and A.E. Ansmits. The Review of Income and Wealth, Series 23, no. 3, September 1978. This approach is now being adopted by many countries in their approach to construction price statistics.

24 For a thorough discussion of alternative approaches to pricing machines with changing technology, see Edward F. Denison, "Theoretical Aspects of Quality Change, Capital Consumption and Net Capital Formation," Problems of Capital Formation. Studies in Income and Wealth, vol. 19, NBER, New York, N.Y., 1957.

25 Some of these are described and some aggregate results presented in Alternative Estimates of Non-Residential Capital in Canada, 1926-1980, P. Koumanakos, uncatalogued Statistics Canada report, December 1980.

Table 2.1

An Example of Price and Quality Measurement

	Year 1	Year 2	Year 3
1 New machines purchased (no.)	5	5	5
2 Cost per machine ($)	1,000	1,000	1,100
3 Adjustment for cost associated with price change ($)			-100
4 Price relative ($)	1,000	1,000	1,000
5 Price index (Year 1=100)	100	100	100
6 Value of new machines ($)	5,000	5,000	5,500
7 Cumulative gross stock ($)	5,000	10,000	15,500
8 Constant price gross stock (7) ÷ (5)x100 ($)	5,000	10,000	15,500
9 Index: Year 1=100	100	200	310
10 Units produced per machine (no.)	2,000	4,000	5,000
11 Total units produced: (no.)	10,000	30,000	55,000
Year 1 machines (no.)	10,000	10,000	10,000
Year 2 machines (no.)	--	20,000	20,000
Year 3 machines (no.)	--	--	25,000
12 Index of units produced (Year 1=100)	100	300	550
13 Output ÷ constant price of total stock: 12 ÷ 9 Index: Year 1=100	100	150	177

3. Some Characteristics of Canada's Fixed Capital

The intent of this section is to present some of the characteristics of Canada's capital flows and stocks with particular emphasis on gross stocks. Fortunately there is a considerable amount of industrial and provincial information available for the capital flows and stock data for both the non-residential and residential portions. However relevant data becomes quite fragmental and inconsistent outside these two particular areas. For example data relating to the service life of fixed assets, leasing, pollution costs, country of control, type of asset, etc., are generally incomplete and inconsistent. Nevertheless some of these data are presented in this section as a means of providing some feeling for the many-sided nature of Canada's capital stocks.

(a) Industrial Distribution

Gross fixed capital flows and stock data are available on an industry basis commencing with the year 1926 for both manufacturing and non-manufacturing industries. Constant price gross stock data for these industries are given in Tables 3.2 and 3.4. Table 3.1 provides an overview in current and constant prices for all industries of gross fixed capital formation, capital consumption allowances and gross and net stocks as well as the implicit price index of gross stocks on a 1971 reference base. The industrial detail for gross stock is expanded for manufacturing commencing with 1955 in Table 3.3. Most of the tables

concentrate on a detailing of gross fixed capital stock since it is the gross stock that is most relevant for growth and productivity analyses.

Over the 1926-1981 period the constant 1971 dollar aggregates of gross fixed capital formation, capital consumption allowances, net and gross stocks increased 1,161, 739, 731 and 663 per cent, respectively. Over the same period the implicit price of the gross stock increased by 754 per cent. From 1955 to 1981 the gross stock increased by 258 per cent in constant price terms while prices rose by 388 per cent.

In terms of constant dollars the overall 1926 to 1981 growth of gross fixed capital stock shows an increase of over 363 billion dollars. Of this manufacturing accounts for about 58 billion while non-manufacturing accounts for the remaining 305 billion. Within manufacturing the major contributing industry groups were foods and beverages, paper and allied industries, primary metals, transportation equipment, products of petroleum and coal and chemicals. Within non-manufacturing the areas contributing most heavily to the overall growth include agriculture, mining and electric power and gas utilities within the goods producing industries while telephone, finance,insurance and real estate (excluding housing) schools, commercial services, and all three levels of government made large gains within the services group. Tables 3.2, 3.3 and 3.4 provide the complete industrial detail

available for gross stocks and as can be seen there is a wealth of such information.

(b) Asset Classes

This section provides a tabular overview of asset classes within non-residential gross fixed capital stock. Table 3.5 provides current and constant price data by asset class for Canada for the 1926 to 1981 period. In terms of constant prices building construction increased by 557 per cent over the period while engineering construction and machinery and equipment rose 648 and 791 per cent respectively.

Table 3.6 presents similar data for the manufacturing and non-manufacturing industry aggregates. For manufacturing the 1926 to 1981 percentage gains for building construction, engineering construction and machinery and equipment were 305, 884 and 609 respectively while for non-manufacturing they were 646, 640 and 894 respectively. In absolute terms the overriding importance of the non-manufacturing industries is clear, especially in the areas of building and engineering construction.

Additional industrial detail corresponding to Table 3.2, 3.3 and 3.4 detail is available for the above noted asset categories and for capital items charged to operating expense. However, other sources of information would have to be developed and/or

examined to obtain insight into the detailed types of assets making up the four asset classes now available. While some related data are given in a later part of this section, this area is beyond the scope of this report.

(c) Regional Distribution

Commencing with the year 1955 the Construction Division of Statistics Canada has developed a set of provincial estimates[1] for year-end and mid year gross and net stocks as well as for gross fixed capital formation and capital consumption allowances - all in current and constant price terms. Data made available include overall provincial aggregates, totals for manufacturing and non-manufacturing industries and non-confidential industrial detail within these latter aggregates. This is a wealth of additional detail that should be invaluable to analysts of Canada's capital flows and stocks.

Table 3.7 presents provincial capital stock data for selected years over the 1955 to 1981 period for the total of all industries and for the manufacturing and non-manufacturing aggregates. However considerable additional industrial detail is available from Statistics Canada. In terms of overall percentage growth between 1955 and 1981 Newfoundland showed the highest (502) followed by Alberta (383), British Columbia (309), Quebec (251), Ontario (237), Nova Scotia (203), New Brunswick (194), Manitoba (180), Saskatchewan (164) and Prince Edward Island (138).

(d) Service Lives

As discussed in Section 2 the average economic lives of assets used in the official estimates of fixed capital flows and stocks and given in Table 3.8, "Service Lives in Years of Fixed Capital Assets" are based on fragmentary and sometimes not too relevant data sources. There is need for a proper and up-to-date survey to determine the amount of distortion that may now exist in the capital stock estimates.

Poor as these economic life estimates may be they are much better than tax life data as summarily presented in Table 3.9. As discussed below these latter data quite often bear no relationship whatever to economic life expectations. Instead they are the result of other considerations such as fiscal or regional needs.

Tax lives, i.e., the maximum number of years allowed by the Revenue Department for the write-off of the capital cost of an asset, bear little resemblance to the economic or service lives of fixed assets. Depreciable property for tax purposes is assigned to a specific tax class with each class having a particular maximum annual rate of allowable capital consumption allowance. In addition special classes are used to accommodate accelerated write-off approved by legislation. Examples of the latter case include tax classes 24 (related to water pollution abatement), 27 (air pollution abatement), 29 (manufacturing and processing machinery and equipment) and class 34 (energy conservation equipment) - all of which have a

maximum rate of 50 per cent (2 years). Another special case allowed the acquired capital cost of an asset to be "adjusted" upwards before capital consumption allowances were calculated.[2] Throughout the history of tax laws there are numerous cases of special or accelerated write-offs, changes in class rates and deferred depreciation provisions, - all of which make this source of information rather useless for purposes of checking on asset life assumptions.

(e) The Rental of Fixed Assets

The rental of fixed assets is rapidly growing in importance and casts some doubt on the relevance of ownership-based fixed capital stock data for certain types of productivity analyses. The data and following discussion provides an indication of the amount of possible mismatching between ownership and usage of fixed assets.

While there are a number of data sources that provide information on certain aspects of the ownership-user problem, the most complete and comprehensive rental data source now available is the input-output tables prepared by Statistics Canada. Table 3.10 gives the demand for the "commodity" gross rent in 1976 for non-confidential categories. It can be seen that paid and imputed residential rents predominate but the importance of the remaining items is sizeable and represent considerable fixed capital stock. In terms of gross rents contained in the

intermediate input column ($6.2 billion in current 1976 dollars and $6 billion in constant or 1971 dollars) it could be assumed that, in terms of current prices, as much as 12 per cent of gross non-residential fixed stock is rented. Because of the decline in rental rates of data processing equipment between 1971 and 1976, the constant price percentage would approach 18 per cent. In 1976 the mid-year gross fixed stock of all components in Canada was $534 billion in current prices and $332 billion in 1971 constant prices. If one assumes that gross rents represented on average one-tenth of the asset's value, then the rented non-residential fixed assets would have a value of some $60 billion in 1976!

If one examines the industrial distribution of the largest class (number 55900) it is seen that industry usage of rented assets is very widespread, while the ownership of rented assets is fairly concentrated. Industries paying and/or receiving more than $10 million in gross rents are shown in Table 3.11.

In terms of recent growth, a look at the input-output table data for class 55,900 for the period 1971 to 1977 inclusive shows that a number of large users of rented assets greatly increased this intermediate input in constant price terms over this period. Those industries owning assets and renting them to others remained highly concentrated over the 1971-77 period, with practically all the growth occurring in insurance and in other finance, insurance and real estate industries. Tables 3.12 and 3.13 present 1971 to 1977 growth for industries paying and receiving gross rents.

Another set of data collected by Statistics Canada provides information on finance leasing by type of equipment and by

province for the years 1978 and 1978 on a matched sample basis. Although not providing complete coverage, Tables 3.16 and 3.17 do give an overview of the equipment and provincial mixes involved.

The same survey also provides an indication of the length of leases. Data for some 78 reporting corporations in 1978 and for 80 in 1979 are given in Table 3.14.

Still another bit of useful information pertains to the ownership of the corporations in 1979 for 88 reporting corporations. This information is given in Table 3.15.

Finance leasing is usually a service provided by financial intermediaries. It consists of leasing equipment to a corporation having to finance capital assets. In general these financial lease agreements extend over the full expected useful life of the asset - the total rental payments of the lessee corporation will fully cover the cost of the equipment plus the lessor's anticipated expenses and profits. Once the financing lease contract is signed, the lessor will pay for and take title to the asset selected and ordered by the lessee. The lessor arranges for delivery to the lessee

without handling the asset and without retaining any of the normal responsibilities of ownership such as maintenance and repairs, insurance, taxes, fees, etc. Finance leasing contracts are non-cancellable. In a typical case the lessor amortizes the entire cost of the capital asset plus his profit over the entire useful life of the lease - he does not hold any equipment inventory and he is not an effective supplier of capital assets.

(f) Pollution Abatement and Control

Costs associated with improving and protecting the environment can adversely affect productivity, - at least in the shortrun. These costs can add to fixed capital formation and stocks without necessarily increasing productive capacity. Additionally they can add to plant and equipment maintenance costs. Fortunately, from a longer term point of view these expenditures may well lead to productivity advances in that an improved environment can reduce some costs and lead to increased economic production such as recreation, fishing and agriculture.

Comprehensive data relating to capital and current costs of pollution abatement do not exist for Canada. It is difficult to

obtain such data especially where they are joint or shared and where abatement is achieved by change of process rather than by add-on equipment. Indirect effects are even more difficult to measure. Such effects would include demand changes due to cost changes as well as shifts in external trade and in domestic employment and competition.

Some data relating to direct costs of pollution abatement do exist for Canada. One source of pollution control costs is a now discontinued Statistics Canada survey[3] for the years 1970 to 1975 inclusive. This survey covered all firms operating a business for profit, filing an income tax return in Canada and applying for and receiving certification by Environment Canada for permission to write off pollution control capital expenditures within a two year period. Selected results by province and industry are given in Tables 3.19 and 3.20.

Another Statistics Canada report[4] provides some additional industrial detail based on the above survey results for mining and manufacturing. These are given in Table 3.21.

Another source of data for pollution control capital expenditures is corporation taxation statistics[5] Tax class 24 (water pollution) and class 27 (air pollution) data are reported by industry. Both classes provide for accelerated capital cost allowances of up to 50 per cent. However class 29 also provides for capital cost allowances of up to 50 per cent for new

manufacturing and processing equipment installed, some of which may be for the introduction of new technology or processes that would also reduce pollution. In any case these data leave a great deal to be desired for the purpose at hand, - namely to derive an overview of the amount of fixed capital formation and stocks devoted to pollution control as opposed to new productive capability. In the case of Table 3.22, providing accelerated capital cost allowance data, the amount of actual fixed capital formation involved would range up to double the amounts reported, - assuming, at maximum, a 50 per cent write-off.

Still another piece of information concerning business capital investment in pollution abatement is derived by a Department of Industry, Trade and Commerce survey.[6] Data from this source given in Table 3.23 first became available for 1977, and because of its restricted coverage and the size of the reporting units involved detailed industry and province results are not available.

The first comprehensive set of data relating to pollution costs for the United States were prepared for 1972[7] by the U.S. Bureau of Economic Analysis and have been updated in subsequent years by Cremeans[8] and by Segel and Dreiling.[9] The B.E.A. survey includes all charges for controlling the emission of pollutants but does not include other aspects of environmental protection such as the conservation of natural resources or the protection of endangered species. In 1972 total outlays in the U.S. totalled about $19 billion or 1.6 per cent of Gross National

Product. About $6 billion of this represented expenditures by business on capital account and in turn this was about 3 1/2 per cent of new fixed capital formation. In 1973, 74 and 75 this latter percentage increased slowly to 4 per cent. The proportions spent on air, water and solid waste abatement remained fairly consistent at 60, 33 and 7 per cent respectively. Over this same period total U.S. expenditure on pollution abatement and control rose to 2 per cent of G.N.P. Table 3.24 provides selected U.S. pollution control and abatement expenditures over the 1972 to 1976 period.

From an industry point of view new plant and equipment expenditures by U.S. business for pollution abatement has been largely concentrated in a few industries. For example five industries accounted for 68 per cent of total 1974 abatement expenditures: electric utilities, petroleum, non-ferrous metals, paper and chemicals. Four industries spent more than 10 per cent of their total plant and equipment budgets for abatement: non-ferrous metals (22 per cent), paper (19 per cent), stone, clay and glass (13 per cent) and iron and steel (12 per cent).[10] In 1977 these latter four industries spent 17, 14, 7 and 17 per cent respectively of their new plant and equipment budgets on abatement. Other industries in 1977 which spent a large proportion of their new investment budgets on pollution control included primary metals (16 per cent), chemicals (10 per cent), and electric utilities (10 per cent).[11]

The Council on Environmental Quality also estimates that the U.S. was spending about $48 billion on pollution control in 1978

or approximately $215 per capita. Of this $23 billion were in response to legislation.

(g) Investment by Country of Control

It would be very useful to have an industrial breakdown of Canada's gross fixed capital stock by country of control in order to study trends and the relative efficiency of Canadian and foreign controlled plants and industries. Such data does not exist however and it is necessary to look at other related data to establish some order of magnitude. One such set of data is that relating to capital expenditure by country of control. These data are direct inputs into fixed capital formation used in deriving the gross fixed capital stock. Tables 3.25 and 3.26 provide some of the more numerically important industry and provincial detail relating to capital expenditure by country of control.[12] The time periods available are too few to calculate gross fixed stock aggregates. The heavy concentration of investment in mining, especially petroleum and gas mining and in the manufacturing industry groups of paper and allied products, transportation equipment and chemicals and allied products is particularly notable.

Another source of country of control information is found in Canada's International Investment Position[13] but unfortunately it contains more than just investment in fixed capital. Still, overall trends in direct investment are useful to examine.

Direct long-term investment by foreigners in Canadian enterprise refers to investment made to create or expand some kind of permanent interest in an enterprise and implies a degree of control over its management. Most direct investment is made to establish factories and sales organizations abroad (usually branches and subsidiaries) or by producing or procuring goods for import or for export to a third country. It is characteristic of direct investment that the investor has managerial control over the enterprise in which the investment is made and that the investor makes his technical know-how available to it.

In Table 3.27, overall foreign long-term direct investment in Canada is given. The amounts involved are larger than total gross fixed capital formation in Canada and therefore are useful only as background to a study of general trends. An industrial breakdown is available for total investment (direct, portfolio and miscellaneous) from the same source but these data are too inclusive to be of much use in analysing fixed capital formation.

(h) Other Capital Related Data

There is a wide range of miscellaneous pieces of information available that relate to capital-in-use or asset availability that can be drawn upon to gain further insight into capital/output relationships. This section will present only a few of these as examples of this type of data.

For agriculture, data are available for such diverse items as number of farms, acreage, average size of farms, economic regions, number of tractors and combines, and number of livestock and poultry. Table 3.28 provides some of these data for the more recent decennial census years.

Forestry related data consist of the type of forest lands in Canada as well as provincial distribution of forest lands. Table 3.29 provides some of these data for the year ending March 31, 1977.

In the case of fisheries data on the number and size of marine fishing vessels are available. These are given in Table 3.30 for the Atlantic and Pacific regions.

Underlying the efficiency with which goods get transported in Canada are a number of data relating to roads and highways, pipelines, transmission lines, etc. Some of these related data are given in Tables 3.31 to 3.36.

(i) Housing Stocks and Rents

Since official published capital stock data for Canada exclude residential capital stock and since the overall measures of G.N.P. and Real Domestic Product include all housing it is useful to look at the importance of residential stocks and rents. Table 3.37 provides an historical summary of the number of

dwellings in Canada for the 1949 to 1980 period. Over the 32 year period covered by the table, some fairly significant trends are clearly seen. Total dwellings in Canada increased by 148 per cent but single dwellings only increased by 103 per cent compared with a 242 per cent increase in multiples. Total owner-occupied dwellings rose 131 per cent while rented dwellings went up by 180 per cent. This widespread shifting toward multiple and rented dwellings is seen in Table 3.38 which provides a comparison of the percentage changes in number of dwellings by province and territory between 1949 and 1980. New Brunswick is the only province to show a higher growth rate in owner-occupied dwellings while all provinces and territories show the shift to multiple dwellings. Table 3.39 provides an overview of the composition of dwelling types for 1949 and 1980. Again the shift to multiple dwellings is apparent.

Table 3.40 provides an overview of the mid-year net stock of Canada's dwellings by province and territory in terms of 1971 constant prices. Gross stock data are not prepared but on the basis of internal estimates at Statistics Canada would seem to be about 60 per cent higher in terms of level. Overall trends would not be altered in any significant way. It is interesting to note that by 1981 the 1971 constant price value of residential net stock was about one-third the equivalent value for total non-residential net stock, i.e., 89 billion as compared with 271 billion. Table 3.41 provides percentage changes in constant price terms between 1949 and 1981 for mid-year net stocks and

gross fixed capital formation for Canada, the provinces and territories. The phenomenal growth rates of Newfoundland, Alberta, British Columbia and the territories are readily seen.

Table 3.42 provides an historical summary of gross paid and imputed residential rents in current and constant price terms as contained in Canada's National Accounts. The much larger quantity increase reflected in gross rents paid and imputed (531 per cent as opposed to 148 per cent for total dwellings) reflects a sharp increase in the quality and size of the dwellings as well as an increase in the quality and number of amenities such as bathrooms, garages and fully equipped kitchens.

(j) The Vintages of Canada's Fixed Capital Stock

The Construction Division of Statistics Canada has just completed calculations for the average age of Canada's non-residential fixed capital stock on an industry basis for the construction and machinery and equipment components. These data, shown in Tables 3.43 and 3.44, represent a substantial addition to our knowledge. Although the data are inferred from the official data on gross fixed capital formation and end year gross stock, they are very meaningful - especially the trends over time. Some care needs to be exercised in interpreting the data but, in general, a decline in average age implies a trend towards updated technology by the industry concerned, while an increase in average age implies a trend towards older technology and perhaps towards relative inefficiency.

Notes

1 For a complete discussion of the methodology involved in deriving these provincial breakdowns contact the National Wealth and Capital Stock Section, Construction Division, Statistics Canada.

2 Canadian Master Tax Guide, CCH, Canadian Limited, 1979, para 4210.

3 Water and Air Pollution Abatement Expenditures, Un-catalogued publication, Business Finance Division, Statistics Canada, August 1978.

4 Human Activity and the Environment, Statistics Canada, Cat. 11-509, March 1978.

5 Corporation Taxation Statistics, Statistics Canada, Cat. 61-208.

6 Large Firm Survey of Business Capital Investment, Capital Expenditures Group, Department of Industry, Trade and Commerce, Ottawa.

7 John E. Cremeans and Frank W. Segel, "National Expenditures for Pollution Abatement and Control, 1972," Survey of Current Business, February 1975.

8 John E. Cremeans, "Conceptual and Statistical Issues in Developing Environmental Measures, - Recent U.S. Experience," The Review of Income and Wealth, Series 23, no. 2, June 1977.

9 Frank W. Segel and Frederick J. Dreiling, "Pollution Abatement and Control Expenditures, 1972-1976," Survey of Current Business, vol. 58, no. 2, February 1978.

10 John E. Cremeans, Frank W. Segel and Gary L. Ruttedge, "Capital Expenditures by Business for Air, Water and solid Waste Pollution Abatement," Survey of Current Business, vol. 55, no. 7, July 1975.

11 Ninth Annual Report to the President of the Council on Environmental Quality, Environmental Quality, Washington, December 1978.

12 Data sources for Capital Expenditure by Country or Control are given at the end of Tables 3.25 and 3.26. These contain additional industrial detail. In the case of catalogue no. 31-401 other related data such as shipments, employment and value added are also given for foreign controlled establishments.

13 Statistics Canada, Cat. 67-202.

Table 3.1

Fixed Capital Flows and Stocks, Excluding Housing, Canada, 1926-1981

	Gross Fixed Capital Formation	Capital Consumption Allowances	Mid-year Net Stock	Mid-year Gross Stock	Gross Fixed Capital Formation	Capital Consumption Allowances	Mid-year Net Stock	Mid-year Gross Stock	Implicit Price Index of Gross Stock
	(millions of current dollars)				(millions of constant 1971 dollars)				1971=100
1926	622	513	9,705	16,317	2,047	1,679	32,618	54,813	29.8
1927	776	515	9,724	16,421	2,580	1,715	33,234	56,106	28.9
1928	959	533	10,116	17,017	3,184	1,765	34,375	57,836	29.4
1929	1,126	567	10,941	18,234	3,602	1,832	35,970	60,093	30.3
1930	970	561	10,885	18,049	3,261	1,904	37,533	62,488	28.9
1931	652	540	10,461	17,411	2,333	1,943	38,406	64,206	27.1
1932	359	524	10,038	16,929	1,323	1,928	38,298	64,736	26.2
1933	250	497	9,552	16,375	948	1,879	37,531	64,434	25.4
1934	318	494	9,485	16,523	1,161	1,830	36,730	64,039	25.8
1935	390	489	9,439	16,626	1,416	1,790	36,209	63,852	26.0
1936	452	495	9,608	17,067	1,570	1,769	35,922	63,940	26.7
1937	651	532	10,260	18,390	2,095	1,778	35,982	64,454	28.5
1938	611	540	10,358	18,564	1,956	1,795	36,221	65,069	28.5
1939	577	544	10,388	18,686	1,855	1,805	36,327	65,443	28.6
1940	851	584	10,901	19,657	2,584	1,847	36,720	66,196	29.7
1941	1,226	670	12,275	21,964	3,408	1,943	37,821	67,791	32.4
1942	1,316	751	13,607	24,125	3,499	2,054	39,276	69,789	34.6
1943	1,275	811	14,694	25,909	3,382	2,139	40,620	71,775	36.1
1944	1,071	849	15,302	27,058	2,783	2,208	41,529	73,512	36.8
1945	1,002	855	15,442	27,477	2,619	2,259	41,997	74,829	36.7
1946	1,292	880	16,243	28,939	3,342	2,289	42,705	76,296	37.9
1947	1,937	1,014	19,068	33,772	4,441	2,349	44,277	78,667	42.9
1948	2,479	1,185	22,495	39,423	5,107	2,463	46,645	81,996	48.1
1949	2,756	1,329	25,036	43,354	5,370	2,601	49,352	85,768	50.5
1950	3,052	1,477	27,813	47,606	5,616	2,736	52,176	89,648	53.1
1951	3,445	1,753	33,244	56,122	6,303	2,896	55,319	94,070	59.7
1952	4,559	1,919	36,629	61,183	7,300	3,093	59,126	99,357	59.7
1953	4,844	2,074	39,613	65,498	7,646	3,304	63,401	105,215	61.6
1954	4,531	2,210	42,107	69,146	7,119	3,510	67,376	111,007	62.2
1955	4,891	2,387	45,710	74,641	7,526	3,710	71,088	116,709	64.0
1956	6,536	2,671	51,528	83,298	9,575	3,946	75,811	123,416	67.5
1957	7,337	2,932	56,426	90,058	10,545	4,202	81,798	131,257	68.6
1958	6,630	3,134	60,491	95,689	9,494	4,430	87,502	138,887	68.9
1959	6,728	3,337	64,642	101,874	9,473	4,639	92,451	146,014	69.8
1960	6,861	3,539	68,586	107,892	9,567	4,855	97,223	153,100	70.5
1961	6,793	3,707	71,495	112,553	9,533	5,055	101,818	160,017	70.3
1962	7,213	3,918	75,911	119,245	9,916	5,233	106,399	166,682	71.5
1963	7,744	4,162	81,468	127,327	10,343	5,416	111,204	173,310	73.5
1964	8,991	4,457	87,561	136,145	11,672	5,642	116,682	180,781	75.3
1965	10,714	4,877	97,310	149,954	13,248	5,923	123,359	189,672	79.1
1966	12,908	5,373	109,082	166,223	15,211	6,270	131,492	200,173	83.0
1967	12,969	5,794	118,928	179,649	15,023	6,659	140,145	211,483	84.9
1968	12,647	6,168	126,517	190,450	14,616	7,034	148,118	224,406	85.6
1969	13,543	6,766	139,498	209,566	15,005	7,407	155,707	233,331	89.8
1970	14,660	7,409	153,328	230,107	15,534	7,793	163,374	244,819	94.0
1971	16,159	8,191	171,228	257,086	16,159	8,191	171,228	257,086	100.0
1972	17,397	8,980	188,315	283,511	16,671	8,624	179,236	270,093	105.0
1973	20,641	10,099	212,599	320,583	18,592	9,131	187,990	284,174	112.8
1974	25,872	12,287	259,841	391,360	20,300	9,714	198,013	299,641	130.6
1975	31,102	14,713	308,022	464,539	21,586	10,322	208,938	316,213	146.9
1976	32,784	16,689	349,753	528,199	21,227	10,940	219,713	333,094	158.6
1977	35,533	19,179	396,388	601,359	21,137	11,546	229,652	349,461	172.1
1978	38,909	22,122	448,319	683,854	21,197	12,121	238,986	365,171	187.3
1979	46,732	25,667	515,094	788,527	23,125	12,715	248,729	381,214	206.8
1980 (1)	54,461	29,497	585,324	898,687	24,658	13,382	259,571	398,896	225.3
1981 (2)	64,214	34,877	690,856	1,063,502	25,804	14,095	271,063	417,964	254.4

Source Fixed Capital Flows and Stocks Statistics Canada Catalogue 13-568 and Construction Division, Statistics Canada.

(1) Preliminary (2) Expected

Table 3.2

Mid-year Gross Fixed Capital Stock, (Excluding Housing)
Manufacturing, Major Industry Groups, 1926 - 1981

	1926	1927	1928	1929	1930	1931	1932	1933	1934
	(Millions of 1971 Constant Dollars)								
Total manufacturing	11,346	11,607	11,958	12,327	12,618	12,729	12,609	12,339	12,027
Food and beverage industries	1,158	1,182	1,217	1,272	1,325	1,353	1,358	1,343	1,323
Tobacco and tobacco products	35	33	33	33	36	38	38	38	38
Rubber and plastic products	132	130	131	134	137	136	131	129	129
Leather and leather products	94	91	89	87	87	84	79	78	78
Textiles	765	782	805	815	824	851	867	862	862
Knitting mills	196	203	216	235	245	239	234	226	214
Clothing industries	138	139	144	151	151	146	139	134	132
Wood industries	965	981	1,011	1,012	1,003	980	941	903	863
Furniture and fixtures	506	519	512	496	479	460	445	429	410
Paper and allied industries	1,867	2,007	2,145	2,237	2,296	2,337	2,325	2,277	2,219
Printing, publishing and allied industries	474	486	512	557	585	593	596	593	584
Primary metals	999	1,000	999	1,007	1,030	1,048	1,035	993	944
Metal fabricating	424	422	421	421	420	409	393	372	344
Machinery industries	379	371	364	354	343	328	306	281	256
Transportaion equipment industries	1,069	1,080	1,111	1,151	1,176	1,183	1,183	1,177	1,171
Electrical products	285	283	280	278	278	277	270	257	242
Non-metallic mineral products	500	511	545	603	657	688	692	689	687
Petroleum and coal products	300	311	331	362	391	410	415	415	417
Chemicals and chemical products	921	935	946	970	1,000	1,011	1,006	988	960
Miscellaneous manufacturing industries	142	142	147	152	155	159	158	157	156

Table 3.2 (cont'd)

	1935	1936	1937	1938	1939	1940	1941	1942	1943
	(Millions of 1971 Constant Dollars)								
Total manufacturing	11,745	11,565	11,542	11,557	11,515	11,732	12,387	13,177	13,707
Food and beverage industries	1,315	1,320	1,344	1,380	1,414	1,461	1,521	1,569	1,601
Tobacco and tobacco products	38	47	57	60	62	65	68	70	73
Rubber and plastic products	128	141	157	159	160	163	165	163	161
Leather and leather products	78	88	99	99	100	103	113	120	123
Textiles	873	883	886	885	874	891	931	951	947
Knitting mills	204	196	191	185	182	182	181	177	170
Clothing industries	129	127	127	126	125	127	144	161	163
Wood industries	820	781	765	747	708	695	714	732	745
Furniture and fixtures	385	351	319	291	267	247	232	219	203
Paper and allied industries	2,158	2,112	2,099	2,091	2,070	2,097	2,148	2,165	2,173
Printing, publishing and allied industries	585	590	591	595	603	614	618	612	599
Primary metals	893	846	845	859	859	950	1,202	1,535	1,778
Metal fabricating	319	312	311	308	312	327	470	715	901
Machinery industries	239	230	219	209	205	220	234	245	257
Transportation equipment industries	1,172	1,176	1,191	1,236	1,275	1,297	1,317	1,366	1,412
Electrical products	226	213	204	200	197	197	204	212	214
Non-metallic mineral products	687	683	680	674	663	662	670	676	679
Petroleum and coal products	420	421	424	427	428	430	433	432	425
Chemicals and chemical products	924	894	881	875	859	850	863	890	911
Miscellaneous manufacturing industries	154	153	153	152	151	154	160	168	172

Table 3.2 (cont'd)

	1944	1945	1946	1947	1948	1949	1950	1951	1952
	(Millions of 1971 Constant Dollars)								
Total manufacturing	13,982	14,183	14,372	14,768	15,406	16,018	16,428	17,027	18,028
Food and beverage industries	1,644	1,710	1,795	1,919	2,076	2,206	2,286	2,362	2,445
Tobacco and tobacco products	75	78	81	86	91	94	96	97	97
Rubber and plastic products	157	161	173	194	213	226	234	243	257
Leather and leather products	127	133	138	143	148	150	150	147	145
Textiles	946	952	971	1,027	1,096	1,154	1,190	1,228	1,274
Knitting mills	164	164	167	170	177	184	189	192	196
Clothing industries	165	176	187	195	204	213	219	224	232
Wood industries	750	735	727	742	768	796	810	826	862
Furniture and fixtures	193	188	181	176	176	175	174	176	174
Paper and allied industries	2,189	2,194	2,219	2,297	2,398	2,481	2,537	2,653	2,812
Printing, publishing and allied industries	589	588	589	597	619	647	668	695	717
Primary metals	1,903	1,963	1,967	1,967	1,982	2,006	2,015	2,068	2,228
Metal fabricating	1,003	1,052	1,060	1,050	1,049	1,051	1,057	1,074	1,114
Machinery industries	264	269	270	275	289	305	317	334	361
Transportation equipment industries	1,403	1,388	1,365	1,319	1,276	1,272	1,283	1,306	1,355
Electrical products	219	230	238	250	278	317	348	387	443
Non-metallic mineral products	678	675	673	688	725	752	761	784	823
Petroleum and coal products	421	425	439	488	574	641	689	765	876
Chemicals and chemical products	921	930	951	1,000	1,072	1,142	1,190	1,243	1,389
Miscellaneous manufacturing industries	173	176	181	187	196	207	215	223	232

Table 3.2 (cont'd)

	1953	1954	1955	1956	1957	1958	1959	1960	1961
					(Millions of 1971 Constant Dollars)				
Total manufacturing	19,126	20,140	21,160	22,548	24,163	25,438	26,463	27,589	28,646
Food and beverage industries	2,530	2,647	2,778	2,906	3,037	3,169	3,307	3,470	3,660
Tobacco and tobacco products	100	103	107	115	126	140	153	162	170
Rubber and plastic products	275	299	323	347	373	393	412	441	467
Leather and leather products	146	148	149	150	152	154	155	156	157
Textiles	1,296	1,305	1,317	1,341	1,356	1,356	1,359	1,363	1,360
Knitting mills	200	203	205	207	204	193	178	172	176
Clothing industries	240	248	253	258	259	253	246	247	251
Wood industries	893	911	934	979	1,009	1,022	1,046	1,082	1,128
Furniture and fixtures	172	178	186	190	183	177	180	187	192
Paper and allied industries	2,957	3,097	3,265	3,554	3,924	4,183	4,324	4,484	4,653
Printing, publishing and allied industries	719	738	768	790	823	856	879	901	924
Primary metals	2,416	2,569	2,727	2,968	3,284	3,561	3,760	3,978	4,170
Metal fabricating	1,163	1,208	1,257	1,323	1,397	1,453	1,504	1,564	1,606
Machinery industries	394	422	442	463	494	521	541	564	582
Transportation equipment industries	1,437	1,530	1,590	1,640	1,688	1,721	1,766	1,822	1,867
Electrical products	498	549	598	651	713	763	802	840	875
Non-metallic mineral products	861	906	961	1,075	1,215	1,282	1,343	1,420	1,472
Petroleum and coal products	994	1,120	1,270	1,410	1,533	1,672	1,818	1,931	1,996
Chemicals and chemical products	1,594	1,717	1,780	1,919	2,121	2,291	2,410	2,519	2,643
Miscellaneous manufacturing industries	241	245	251	262	273	279	282	288	296

Table 3.2 (cont'd)

	1962	1963	1964	1965	1966	1967	1968	1969	1970
	(Millions of 1971 Constant Dollars)								
Total manufacturing	29,589	30,532	31,757	33,569	35,959	38,385	40,362	42,219	44,400
Food and beverage industries	3,862	4,052	4,235	4,431	4,648	4,887	5,126	5,364	5,619
Tobacco and tobacco products	176	179	184	193	204	217	229	238	246
Rubber and plastic products	477	488	509	539	584	630	665	718	781
Leather and leather products	156	157	157	158	161	165	169	174	178
Textiles	1,360	1,383	1,445	1,539	1,629	1,690	1,734	1,789	1,851
Knitting mills	180	186	194	201	208	212	211	215	221
Clothing industries	255	260	267	277	285	288	288	289	287
Wood industries	1,174	1,216	1,270	1,343	1,422	1,469	1,516	1,631	1,779
Furniture and fixtures	193	194	197	208	228	249	269	283	293
Paper and allied industries	4,799	4,967	5,239	5,640	6,166	6,705	7,076	7,335	7,662
Printing, publishing and allied industries	954	994	1,048	1,096	1,139	1,182	1,221	1,262	1,307
Primary metals	4,343	4,495	4,643	4,858	5,169	5,512	5,763	5,986	6,289
Metal fabricating	1,593	1,554	1,550	1,610	1,730	1,845	1,937	2,038	2,153
Machinery industries	600	630	680	736	793	856	909	952	1,003
Transportation equipment industries	1,914	1,983	2,109	2,315	2,578	2,816	2,974	3,113	3,310
Electrical products	916	963	1,013	1,078	1,172	1,280	1,364	1,435	1,507
Non-metallic mineral products	1,521	1,553	1,577	1,635	1,757	1,903	2,007	2,104	2,223
Petroleum and coal products	2,066	2,137	2,172	2,207	2,269	2,363	2,482	2.605	2,782
Chemicals and chemical products	2,741	2,814	2,921	3,133	3,416	3,682	3,954	4,190	4,382
Miscellaneous manufacturing industries	310	329	349	373	404	438	469	499	528

Table 3.2 (cont'd)

	1971	1972	1973	1974	1975	1976	1977	1978	1979
	(Millions of 1971 Constant Dollars)								
Total manufacturing	46,634	48,609	50,680	53,127	55,693	58,110	60,371	62,229	63,916
Food and beverage industries	5,871	6,107	6,370	6,658	6,903	7,083	7,251	7,431	7,628
Tobacco and tobacco products	252	255	256	262	274	277	279	283	288
Rubber and plastic products	860	946	1,035	1,133	1,206	1,252	1,284	1,313	1,351
Leather and leather products	181	188	196	202	208	213	215	217	217
Textiles	1,897	1,927	1,957	1,997	2,041	2,075	2,077	2,063	2,064
Knitting mills	225	232	244	252	253	251	250	247	246
Clothing industries	274	266	274	282	281	281	285	288	293
Wood industries	1,913	2,043	2,209	2,413	2,599	2,743	2,851	2,963	3,113
Furniture and fixtures	305	316	334	359	382	394	401	405	409
Paper and allied industries	8,056	8,393	8,616	8,813	9,012	9,228	9,457	9,560	9,585
Printing, publishing and allied industries	1,365	1,424	1,480	1,541	1,602	1,661	1,712	1,739	1,759
Primary metals	6,641	6,972	7,288	7,639	8,042	8,393	8,674	8,852	8,943
Metal fabricating	2,251	2,332	2,425	2,539	2,651	2,746	2,817	2,872	2,945
Machinery industries	1,051	1,086	1,134	1,204	1,288	1,372	1,441	1,497	1,564
Transportation Equipment industries	3,483	3,577	3,686	3,871	4,064	4,195	4,338	4,511	4,737
Electrical products	1,576	1,642	1,716	1,800	1,871	1,931	1,982	2,016	2,046
Non-metallic mineral products	2,317	2,399	2,525	2,650	2,753	2,874	3,005	3,118	3,240
Petroleum and coal products	3,005	3,220	3,459	3,743	4,040	4,272	4,428	4,544	4,637
Chemicals and chemical products	4,561	4,719	4,896	5,163	5,600	6,238	6,984	7,662	8,196
Miscellaneous manufacturing industries	552	566	582	607	623	632	641	650	654

Table 3.2 (cont'd)

	1980(1)	1981(2)
	(Millions of Constant 1971 Dollars)	
Total manufacturing	66,140	68,915
Food and beverage industries	7,862	8,085
Tobacco and tobacco products	294	299
Rubber and plastic products	1,395	1,441
Leather and leather products	220	223
Textiles	2,077	2,098
Knitting mills	246	245
Clothing industries	299	303
Wood industries	3,272	3,415
Furniture and fixtures	415	422
Paper and allied industries	9,805	10,260
Printing, publishing and allied industries	1,799	1,840
Primary metals	9,120	9,368
Metal fabricating	3,039	3,117
Machinery industries	1,655	1,752
Transportation Equipment industries	5,148	5,698
Electrical products	2,108	2.191
Non-metallic mineral products	3,363	3,440
Petroleum and coal products	4,735	4,921
Chemicals and chemical products	8,628	9,125
Miscellaneous manufacturing industries	662	673

Source Fixed Capital Flows and Stocks Statistics Canada Calalogue 13-568 and Construction Division, Statistics Canada.

(1) Preliminary (2) Expected

Table 3.3

Mid-year Gross Stock (Exluding housing)
Manufacturing, Individual Industries,
Selected years, 1955 - 1981

Industry:	1955	1960	1965	1970	1975	1980 (1)	1981 (2)
	(millions of constant 1971 dollars)						
Meat and poultry products	324	425	522	645	803	953	981
Fish products	110	128	175	277	368	450	461
Fruit and vegetable processing	174	227	326	392	505	582	598
Dairy products	353	401	516	695	838	940	968
Flour and breakfast cereals	140	179	247	295	312	336	339
Feed industry	148	178	216	289	371	453	467
Bakery products	320	417	509	594	654	651	650
Miscellaneous food industries	464	594	768	941	1,190	1,432	1,505
Beverage industries	747	923	1,156	1,497	1,869	2,070	2,123
Leaf tobacco processors	29	34	49	54	66	63	61
Tobacco product manufacturers	79	129	145	193	208	232	239
Rubber products industries	260	352	413	569	861	945	978
Plastics fabricating N.E.S.	65	90	127	212	346	450	463
Leather tanneries	33	35	31	33	41	45	46
Shoe factories	73	76	78	90	102	109	111
Leather glove factories	4	4	4	4	5	5	5
Luggage, hand bags and small leather goods	41	43	47	53	63	63	64
Cotton yarn and cloth mills	289	317	352	378	390	347	351
Wool yarn and cloth mills	72	73	81	90	88	84	89
Man-made fibre, yarn and cloth	631	650	757	920	993	992	992
Cordage and twine	17	17	23	26	26	22	22
Felt and fibre processing mills	25	26	31	35	35	36	35
Carpet mat and rug industry	75	67	66	116	164	202	209
Canvas products and cotton and jute bags industry	20	20	26	31	29	28	27
Automobile fabric accessories	22	21	21	30	40	62	65
Miscellaneous textile industries	167	173	185	229	279	308	314

Table 3.3 (cont'd)

Industry:	1955	1960	1965	1970	1975	1980 (1)	1981 (2)
	(millions of constant 1971 dollars)						
Hosiery mills	99	89	103	99	82	71	68
Knitting mills (ex. hosiery mills)	106	83	99	123	171	175	178
Men's clothing	128	120	133	141	138	150	155
Women's clothing	62	63	72	74	77	82	81
Children's clothing	15	17	20	21	22	25	25
Fur goods industry	10	10	10	10	7	5	5
Foundation garment industry	25	23	25	28	27	26	27
Miscellaneous clothing industries	13	14	16	14	12	12	12
Sawmills, planing, and shingle mills	626	711	868	1,168	1,791	2,309	2,426
Veneer and plywood mills	105	127	168	229	305	365	373
Sash, door and other millwork	122	156	190	225	266	296	296
Wooden box factories	19	20	26	33	37	38	38
Coffin and casket industry	3	4	4	5	7	8	8
Miscellaneous wood industries	59	64	87	119	192	251	270
Household furniture	103	106	115	161	209	223	223
Office furniture	32	30	33	54	66	74	80
Miscellaneous furniture and fixtures	48	49	58	75	102	113	115
Electric lamps and shades	2	2	2	2	4	4	4
Pulp and paper mills	2,887	3,978	5,012	6,848	8,070	8,789	9,237
Asphalt roofing	23	31	42	48	47	54	54
Paper box and bag manufacturers	229	314	383	505	601	654	659
Miscellaneous paper converters	121	155	197	254	285	299	302
Commercial printing	363	417	505	652	812	915	945
Platemaking, typesetting and trade bindery	49	56	64	73	84	92	93
Publishing and printing	358	430	529	584	708	795	805
Iron and steel mills	1,201	1,641	2,238	2,834	3,889	4,625	4,746
Steelpipe and tube mills	107	233	252	288	356	373	388
Iron foundries	88	114	134	174	220	267	265
Smelting and refining	1,145	1,724	1,909	2,578	3,060	3,240	3,351
Aluminum rolling, casting, extruding	67	96	139	176	224	249	255

Table 3.3 (cont'd)

Industry	1955	1960	1965	1970	1975	1980 (1)	1981 (2)
	(millions of constant 1971 dollars)						
Copper and copper alloy rolling, casting and extruding	65	110	118	150	164	156	154
Metal rolling casting and extruding, N.E.S.	53	62	71	90	131	211	212
Boiler and plate works	51	64	65	79	96	114	122
Fabricated structured metal industry	179	235	215	335	428	466	472
Ornamental and architectural metals	101	125	132	169	222	250	252
Metal stamping, pressing and coating	288	352	371	488	600	728	748
Wire and wire products	218	281	299	368	453	495	505
Hardware, tools and cutlery	117	144	154	199	235	277	289
Heating equipment	68	86	86	92	93	93	94
Machine shops	70	77	82	124	156	176	178
Miscellaneous metal fabricating	167	200	210	303	369	444	460
Agricultural implements	103	122	178	214	252	327	338
Miscellaneous machinery and equipment	269	365	456	630	809	1,004	1,060
Commercial refrigeration and air conditioning equipment	12	16	22	29	41	49	51
Office and store machinery	60	62	82	132	187	277	304
Aircraft and aircraft parts	191	270	310	432	466	549	596
Motor vehicle manufacturers	493	551	733	979	1,118	1,368	1,486
Truck body and trailer manufacturers	80	83	100	143	210	265	276
Motor vehicle parts and accessories	537	532	723	1,240	1,587	2,101	2,417
Railroad rolling stock	161	226	241	251	347	479	521
Ship building and repair	93	123	168	190	238	277	291
Boat building and repair	7	13	16	21	26	26	27
Miscellaneous vehicle manufacturers	17	15	17	47	65	77	78
Small electrical appliances	24	38	47	60	76	80	81
Major appliances	102	116	133	155	148	167	170
Lighting fixtures	4	6	8	12	19	23	24
Household radio and television receivers	33	43	55	81	108	124	129
Communications equipment	120	178	268	437	564	673	715

Table 3.3 (cont'd)

Industry:	1955	1960	1965	1970	1975	1980 (1)	1981 (2)
	(millions of constant 1971 dollars)						
Electrical industrial equipment	182	243	290	353	400	422	431
Electric wire and cable	68	122	147	231	303	323	330
Miscellaneous electrical products	65	95	130	179	254	297	312
Clay products	70	120	136	158	171	183	184
Cement manufacturers	324	543	582	721	877	1,083	1,113
Stone products manufacturers	11	15	16	18	16	14	14
Concrete product manufacturers	166	253	371	540	624	653	649
Ready-mix concrete	18	17	13	11	133	217	228
Glass and glass products	152	178	200	399	470	561	577
Abrasives	54	65	70	84	93	103	111
Lime manufacturers	23	40	44	52	65	73	72
Miscellaneous non-metallic mineral products	140	187	202	242	307	476	494
Petroleum refineries	1,151	1,790	2,062	2,636	3,893	4,619	4,806
Miscellaneous petroleum and coal products	113	136	141	141	143	112	111
Mixed fertilizers	27	40	80	165	168	178	201
Plastics and synthetic resins	152	262	322	406	488	602	626
Pharmaceuticals and medicines	86	138	172	240	332	395	407
Paints and varnishes	50	74	89	116	135	152	157
Soap and cleaning compounds	72	93	108	117	121	184	201
Toilet preparations	24	38	50	63	80	97	101
Industrial chemicals	1,228	1,657	2,008	2,886	3,848	6,537	6,922
Miscellaneous chemical industries	146	223	306	390	431	488	514
Scientific and professional equipment	74	85	133	238	278	274	278
Jewellery and silverware	28	28	24	23	32	45	45
Sporting goods and toys	31	37	45	54	66	73	73
Signs and displays industry	20	24	28	35	40	53	56
Miscellaneous manufacturing industries N.E.S.	99	115	144	179	209	221	223

Source Construction Division, Statistics Canada

(1) Preliminary (2) Expected

Table 3.4

Mid-year Gross Fixed Capital Stock (Excluding Housing)
Non-manufacturing Industries 1926 - 1981

	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
	(Millions of 1971 Constant Dollars)									
Total non-manufacturing industries	43,467	44,499	45,879	47,766	49,871	51,478	52,126	52,094	52,012	52,107
Agriculture	8,190	8,221	8,310	8,470	8,666	8,703	8,470	8,139	7,874	7,650
Forestry	218	229	241	253	264	271	272	270	268	266
Fishing	214	225	230	232	231	228	225	227	230	230
Mining, quarries, oil wells	1,180	1,201	1,254	1,359	1,479	1,544	1,533	1,499	1,483	1,522
Construction	614	630	663	730	797	820	801	760	714	675
Air transport	1	1	3	7	11	13	13	14	14	14
Rail transport including, telegraph and cable	13,785	14,034	14,336	14,768	15,209	15,507	15,631	15,610	15,553	15,465
Water transport	338	335	343	357	368	377	378	373	366	361
Motor transport	20	25	33	42	50	55	57	60	63	69
Urban and suburban transport	394	423	453	486	513	531	542	545	551	556
Pipelines	"	"	"	"	"	"	"	"	"	"
Toll highways, bridges, warehousing	41	42	43	45	47	48	47	47	46	46
Grain elevators	106	111	118	132	148	160	165	168	170	173
Broadcasting	12	15	17	18	19	20	21	21	23	24
Telephone service	1,506	1,572	1,649	1,748	1,854	1,939	1,986	2,001	2,004	1,999
Electric power and gas distribution	2,133	2,266	2,429	2,640	2,909	3,207	3,430	3,539	3,602	3,675
Water systems	163	174	187	202	218	234	248	262	273	284
Retail and wholesale trade	2,293	2,330	2,399	2,519	2,626	2,671	2,672	2,645	2,627	2,630
Finance, insurance, real estate	1,233	1,235	1,246	1,271	1,302	1,327	1,347	1,360	1,368	1,373
Schools	1,346	1,399	1,463	1,532	1,613	1,690	1,745	1,776	1,789	1,800
Universities	220	228	233	241	258	282	296	300	302	303
Hospitals	378	389	403	424	450	479	504	519	528	537
Churches	461	487	514	538	559	579	596	607	613	617
Other institutions	"	"	"	"	"	"	"	"	"	"
Commercial services	1,498	1,519	1,563	1,625	1,678	1,697	1,692	1,684	1,684	1,689
Federal government	3,260	3,387	3,542	3,706	3,912	4,126	4,260	4,327	4,381	4,455
Provincial governments	1,152	1,233	1,337	1,468	1,640	1,833	1,985	2,085	2,201	2,363
Municipal governments	2,711	2,786	2,869	2,957	3,053	3,141	3,209	3,258	3,291	3,332

Table 3.4 (cont'd)

	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
	(Millions of 1971 Constant Dollars)									
Total non-manufacturing industries	52,374	52,912	53,512	53,928	54,465	55,404	56,612	58,068	59,530	60,646
Agriculture	7,490	7,483	7,516	7,560	7,666	7,744	7,677	7,429	7,196	7,141
Forestry	266	268	269	269	272	278	286	294	311	334
Fishing	234	236	232	225	219	215	213	209	207	215
Mining, quarries, oil wells	1,597	1,669	1,747	1,823	1,888	1,944	1,977	1,978	1,975	1,977
Construction	643	617	574	499	422	389	413	456	493	533
Air transport	15	17	21	25	27	29	33	38	41	45
Rail transport including, telegraph and cable	15,383	15,301	15,141	14,838	14,532	14,306	14,131	14,062	14,066	14,052
Water transport	367	379	390	394	393	396	411	537	859	1,150
Motor transport	75	81	86	90	97	105	113	117	116	120
Urban and suburban transport	561	568	577	580	580	585	591	597	602	609
Pipelines	"	"	"	"	"	9	52	219	386	420
Toll highways, bridges, warehousing	46	47	47	46	47	49	50	50	51	53
Grain elevators	176	180	184	187	196	207	213	215	217	222
Broadcasting	26	29	32	34	35	35	36	39	45	49
Telephone service	1,990	1,987	1,997	2,027	2,071	2,115	2,149	2,166	2,169	2,183
Electric power and gas distribution	3,740	3,814	3,910	4,002	4,092	4,224	4,414	4,562	4,625	4,681
Water systems	295	304	314	325	335	343	349	357	363	372
Retail and wholesale trade	2,644	2,675	2,728	2,789	2,848	2,904	2,956	2,981	3,004	3,060
Finance, insurance, real estate	1,374	1,370	1,369	1,372	1,375	1,376	1,373	1,364	1,354	1,354
Schools	1,817	1,834	1,847	1,865	1,881	1,885	1,888	1,894	1,901	1,916
Universities	306	311	316	323	331	336	340	341	343	351
Hospitals	549	564	590	618	636	649	661	675	699	738
Churches	621	627	635	643	649	654	658	660	663	667
Other institutions	"	"	"	"	"	"	"	"	"	"
Commercial services	1,709	1,737	1,752	1,771	1,789	1,817	1,850	1,851	1,841	1,851
Federal government	4,530	4,593	4,678	4,778	5.024	5,575	6,392	7,467	8,381	8,781
Provincial governments	2,531	2,769	3,037	3,249	3,417	3,552	3,665	3,747	3,811	3,891
Municipal governments	3,390	3,454	3,526	3,595	3,646	3,685	3,724	3,765	3,810	3,881

Table 3.4 (cont'd)

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
	(Millions of 1971 Constant Dollars)									
Total non-manufacturing industries	100,868	107,094	113,450	119,551	125,512	131,371	137,093	142,778	149,024	156,104
Agriculture	12,835	13,068	13,297	13,624	13,934	14,150	14,292	14,409	14,558	14,789
Forestry	857	910	928	952	988	1,012	1,036	1,081	1,141	1,210
Fishing	337	344	346	347	353	357	369	397	428	454
Mining, quarries, oil wells	4,691	5,538	6,224	6,672	7,100	7,658	8,379	9,141	9,979	10,857
Construction	1,638	1,816	1,934	2,050	2,140	2,208	2,246	2,258	2,304	2,358
Air transport	245	275	335	418	520	617	667	680	683	685
Rail transport including, telegraph and cable	15,395	15,675	15,901	16,111	16,318	16,397	16,264	16,060	15,877	15,616
Water transport	1,848	2,019	2,252	2,444	2,574	2,709	2,834	2,923	2,998	3,106
Motor transport	427	446	458	487	522	549	577	612	656	703
Urban and suburban transport	803	796	784	778	784	801	821	851	926	1,053
Pipelines	1,157	1,541	1,927	2,087	2,182	2,381	2,558	2,690	2,887	3,079
Toll highways, bridges, warehousing	98	131	199	274	321	355	385	416	476	550
Grain elevators	367	382	396	420	447	471	498	521	538	553
Broadcasting	130	140	150	161	182	207	225	240	259	282
Telephone service	4,059	4,381	4,771	5,163	5,538	5,904	6,282	6,690	7,105	7,537
Electric power and gas distribution	10,995	12,047	13,135	14,067	14,869	15,672	16,530	17,405	18,367	19,481
Water systems	976	1,080	1,191	1,320	1,452	1,570	1,672	1,764	1,856	1,983
Retail and wholesale trade	6,263	6,645	7,033	7,409	7,789	8,112	8,373	8,648	8,958	9,298
Finance, insurance, real estate	2,119	2,255	2,434	2,707	3,033	3,368	3,692	3,987	4,319	4,758
Schools	3,474	3,734	4,011	4,297	4,601	4,905	5,335	5,907	6,380	6,838
Universities	597	640	709	804	915	1,045	1,192	1,354	1,554	1,825
Hospitals	2,060	2,231	2,422	2,625	2,819	3,025	3,254	3,480	3,486	3,890
Churches	1,080	1,150	1,227	1,306	1,387	1,471	1,550	1,620	1,680	1,738
Other institutions	82	95	106	119	135	151	169	191	223	259
Commercial services	2,707	2,808	2,921	3,037	3,160	3,284	3,412	3,575	3,800	4,111
Federal government	11,783	12,209	12,615	13,042	13,440	13,764	14,027	14,173	14,306	14,555
Provincial governments	7,471	8,006	8,607	9,251	9,959	10,678	11,368	12,059	12,838	13,674
Municipal governments	6,374	6.732	7,140	7,581	8,049	8,552	9,088	9,650	10,241	10,864

Table 3.4 (cont'd)

	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
	(Millions of 1971 Constant Dollars)									
Total non-manufacturing industries	61,925	63,899	66,590	69,750	73,220	77,043	81,329	86,089	90,867	95,549
Agriculture	7,280	7,641	8,204	8,875	9,533	10,205	10,868	11,493	12,014	12,447
Forestry	356	397	447	487	527	583	639	679	722	781
Fishing	228	243	261	275	289	305	318	326	328	331
Mining, quarries, oil wells	1,989	2,023	2,091	2,190	2,318	2,516	2,804	3,162	3,576	4,045
Construction	585	654	739	819	901	982	1,053	1,138	1,247	1,413
Air transport	56	79	99	110	117	118	122	145	181	216
Rail transport including, telegraph and cable	14,014	14,009	14,057	14,149	14,251	14,378	14,570	14,818	15,061	15,207
Water transport	1,271	1,349	1,411	1,453	1,492	1,526	1,574	1,633	1,691	1,753
Motor transport	139	175	207	225	243	266	294	324	357	394
Urban and suburban transport	620	647	677	697	717	739	758	778	794	800
Pipelines	420	420	420	428	492	557	635	767	886	978
Tolls highways, bridges, warehousing	56	58	60	61	62	63	66	68	71	81
Grain elevators	228	235	244	256	268	284	301	319	336	351
Broadcasting	53	59	66	71	75	78	82	88	102	118
Telephone service	2,243	2,366	2,534	2,719	2,892	3,051	3,217	3,399	3,598	3,812
Electric power and gas distribution	4,798	4,996	5,332	5,854	6,492	7,191	7,985	8,809	9,534	10,193
Water systems	390	413	437	468	510	564	631	707	795	883
Retail and wholesale trade	3,168	3,346	3,564	3,812	4,107	4,421	4,690	5,021	5,463	5,889
Finance, insurance, real estate	1,369	1,395	1,433	1,477	1,541	1,628	1,701	1,772	1,877	1,997
Schools	1,953	2,004	2,071	2,168	2,292	2,434	2,610	2,800	2,996	3,227
Universities	371	397	419	438	457	474	491	510	534	564
Hospitals	789	847	925	1,032	1,149	1,263	1,383	1,528	1,692	1,875
Churches	675	691	719	765	817	863	902	937	976	1,024
Other institutions	2	6	10	17	24	31	38	46	55	68
Commercial services	1,896	1,975	2,083	2,178	2,277	2,389	2,465	2,522	2,574	2,630
Federal government	8,905	8,966	9,071	9,239	9,420	9,664	10,097	10,622	11,050	11,394
Provincial governments	4,047	4,300	4,630	4,947	5,236	5,516	5,826	6,196	6,598	7,021
Municipal governments	4,026	4,209	4,378	4,540	4,725	4,953	5,213	5,482	5,760	6,059

Table 3.4 (cont'd)

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
	(Millions of 1971 Constant Dollars)									
Total non-manufacturing industries	164,214	173,098	182,044	191,112	200,419	210,451	221,484	233,493	246,515	260,521
Agriculture	15,081	15,390	15,651	15,934	16,208	16,454	16,877	17,557	18,399	19,360
Forestry	1,269	1,322	1,381	1,447	1,507	1,559	1,619	1,710	1,823	1,908
Fishing	476	524	579	606	620	627	633	636	637	629
Mining, quarries, oil wells	11,857	13,007	14,166	15,358	16,640	18,117	19,607	20,939	22,253	23,699
Construction	2,365	2,380	2,434	2,507	2,604	2,729	2,906	3,120	3,303	3,440
Air transport	732	846	980	1,119	1,248	1,350	1,445	1,656	1,964	2,204
Rail transport including, telegraph and cable	15,323	15,048	14,719	14,415	14,219	14,197	14,312	14,449	14,596	14,768
Water transport	3,233	3,350	3,469	3,595	3,721	3,836	3,948	4,061	4,185	4,302
Motor transport	739	775	828	882	934	991	1,062	1,152	1,249	1,318
Urban and suburban transport	1,179	1,268	1,310	1,328	1,353	1,385	1,428	1,485	1,556	1,664
Pipelines	3,256	3,478	3,744	4,018	4,285	4,596	4,976	5,350	5,615	5,830
Toll highways, bridges, warehousing	622	686	725	751	772	785	799	818	836	851
Grain elevators	577	616	659	691	707	715	725	740	754	770
Broadcasting	318	359	389	422	471	539	623	706	793	890
Telephone service	8,026	8,574	9,179	9,840	10,541	11,276	12,021	12,802	13,741	14,815
Electric power and gas distribution	20,764	22,179	23,709	25,333	27,019	28,774	30,527	32,426	34,529	36,901
Water systems	2,139	2,281	2,405	2,510	2,627	2,771	2,899	3,011	3,145	3,300
Retail and wholesale trade	9,673	10,087	10,500	10,868	11,212	11,532	11,897	12,352	12,844	13,341
Finance, insurance, real estate	5,264	5,788	6,318	6,848	7,383	7,916	8,569	9,477	10,558	11,699
Schools	7,450	8,166	8,957	9,720	10,406	11,060	11,628	12,074	12,497	12,947
Universities	2,157	2,511	2,896	3,296	3,653	3,984	4,271	4,464	4,598	4,717
Hospitals	4,113	4,356	4,611	4,861	5,090	5,326	5,558	5,785	6,048	6,315
Churches	1,796	1,850	1,896	1,930	1,954	1,971	1,982	1,990	1,996	2,009
Other institutions	292	321	348	379	418	472	524	568	613	663
Commercial services	4,554	5,012	5,390	5,813	6,293	6,820	7,529	8,485	9,659	11,092
Federal government	14,918	15,325	15,714	16,060	16,373	16,725	17,142	17,616	18,172	18,770
Provincial governments	14,525	15,443	16,350	17,248	18,175	19,221	20,433	21,655	22,814	23,962
Municipal governments	11,518	12,153	12,740	13,335	13,988	14,726	15,545	16,413	17,340	18,360

Talbe 3.4 (cont'd)

	1976	1977	1978	1979	1980(1)	1981(2)
	(Millions of 1971 Constant Dollars)					
Total non-manufacturing industries	274,984	289,090	302,942	317,298	332,756	349,049
Agriculture	20,466	21,590	22,653	23,752	24,802	25,672
Forestry	1,958	2,000	2,049	2,104	2,163	2,224
Fishing	638	669	707	761	815	864
Mining, quarries, oil wells	25,358	27,120	28,867	30,926	33,750	37,140
Construction	3,635	3,900	4,146	4,375	4,596	4,803
Air transport	2,264	2,181	2,132	2,223	2,423	2,721
Rail transport including, telegraph and cable	14,903	14,963	15,001	14,998	15,002	14,999
Water transport	4,389	4,475	4,457	4,239	4,076	4,111
Motor transport	1,374	1,446	1,529	1,629	1,736	1,820
Urban and suburban transport	1,803	1,955	2,094	2,201	2,315	2,444
Pipelines	6,040	6,232	6,407	6,529	6,695	7,124
Toll highways, bridges, warehousing	867	881	891	901	914	928
Grain elevators	795	831	876	933	988	1,030
Broadcasting	980	1,065	1,149	1,219	1,285	1,343
Telephone service	15,930	17,032	18,012	18,904	19,854	20,842
Electric power and gas distribution	39,504	42,176	45,080	48,101	50,967	53,718
Water systems	3,469	3,662	3,888	4,138	4,389	4,642
Retail and wholesale trade	13,853	14,349	14,772	15,198	15,642	16,115
Finance, insurance, real estate	12,897	14,114	15,390	16,842	18,432	20,102
Schools	13,368	13,740	14,058	14,320	14,539	14,754
Universities	4,840	4,961	5,075	5,190	5,300	5,388
Hospitals	6,560	6,786	7,007	7,234	7,492	7,773
Churches	2,029	2,052	2,073	2,097	2,125	2,152
Other institutions	719	774	818	857	897	934
Commercial services	12,560	13,815	15,057	16,602	18,381	20,153
Federal government	19,344	19,864	20,321	20,641	20,855	21,076
Provincial governments	25,040	26,048	27,082	28,128	29,134	30,084
Municipal governments	19,403	20,410	21,351	22,257	23,190	24,094

Source Fixed Capital Flows and Stocks, Statistics Canada Catalogue 13-568 and Construction Division, Statistics Canada.

(1) Preliminary (2) Expected

Table 3.5

Gross Fixed Capital Stock (Excluding Housing) by Asset Classes, All Industries, 1926-1981

Year	Building Construction	Engineering Construction	Machinery & Equipment	Capital items charged to Operating Expense	Building Construction	Engineering Construction	Machinery & Equipment	Capital items charged to Operating Expense
	(millions of current dollars)				(millions of constant 1971 dollars)			
1926	5,407	5,396	5,430	84	17,273	20,963	16,286	290
1927	5,566	5,364	5,401	89	17,767	21,620	16,405	314
1928	5,866	5,583	5,472	96	18,423	22,452	16,627	336
1929	6,359	6,085	5,689	100	19,198	23,500	17,045	349
1930	6,306	6,096	5,550	98	19,917	24,651	17,555	367
1931	5,975	5,984	5,360	92	20,409	25,706	17,717	374
1932	5,669	5,893	5,282	85	20,666	26,407	17,314	348
1933	5,546	5,818	4,939	71	20,759	26,773	16,603	299
1934	5,617	5,945	4,897	63	20,819	27,088	15,886	247
1935	5,667	6,099	4,806	54	20,914	27,500	15,238	200
1936	5,823	6,397	4,800	48	21,070	27,934	14,763	173
1937	6,287	6,850	5,196	56	21,287	28,364	14,623	180
1938	6,266	6,998	5,234	65	21,496	28,738	14,626	209
1939	6,343	7,057	5,213	73	21,694	28,940	14,575	234
1940	6,650	7,270	5,614	124	22,069	29,135	14,619	374
1941	7,482	8,061	6,178	244	22,720	29,506	14,891	674
1942	8,371	8,719	6,657	377	23,544	30,005	15,244	995
1943	9,205	9,334	6,899	471	22,285	30,700	15,558	1,233
1944	9,676	9,701	7,143	537	24,761	31,332	16,016	1,403
1945	9,989	9,902	7,040	546	25,128	31,714	16,498	1,490
1946	10,657	10,684	7,112	487	25,587	32,245	17,094	1,371
1947	12,143	12,785	8,390	454	26,199	33,046	18,271	1,150
1948	14,166	14,883	9,930	444	26,960	34,088	19,929	1,019
1949	15,270	16,148	11,493	443	27,788	35,383	21,661	956
1950	16,345	17,608	13,223	429	28,619	36,798	23,378	852
1951	18,970	20,944	15,757	452	29,617	38,354	25,297	802
1952	20,567	22,915	17,229	472	30,827	40,214	27,476	841
1953	21,764	24,182	19,048	505	32,159	42,290	29,886	879
1954	22,379	25,467	20,771	529	33,577	44,303	32,210	917
1955	23,602	27,825	22,643	570	35,109	46,365	34,286	950
1956	25,444	31,746	25,476	632	36,857	48,891	36,674	994
1957	26,827	33,875	28,657	698	38,701	52,210	39,299	1,047
1958	28,250	35,799	30,905	734	40,459	55,795	41,567	1,066
1959	29,418	38,559	33,147	751	42,312	58,983	43,645	1,074
1960	31,165	40,688	35,244	795	44,316	61,871	45,810	1,103
1961	32,607	41,901	37,223	822	46,282	64,818	47,816	1,102
1962	33,945	44,520	39,948	832	48,350	67,674	49,584	1,073
1963	36,216	47,757	42,484	870	50,516	70,391	51,326	1,077
1964	38,512	50,813	45,856	964	52,777	73,446	53,440	1,119
1965	42,343	56,495	50,034	1,082	55,528	76,751	56,210	1,184
1966	48,028	62,423	54,558	1,215	58,928	80,198	59,755	1,293
1967	53,019	67,268	58,063	1,300	62,438	83,755	63,865	1,425
1968	55,986	71,343	61,737	1,384	65,755	87,277	67,839	1,534
1969	62,351	78,435	67,261	1,519	68,985	90,891	71,834	1,621
1970	68,340	86,205	73,908	1,653	72,183	94,863	76,070	1,702
1971	75,473	99,466	80,389	1,757	75,473	99,466	80,389	1,757
1972	83,914	110,437	87,321	1,840	78,734	104,478	85,091	1,790
1973	94,972	126,845	96,738	2,028	82,077	109,604	90,623	1,870
1974	113,462	158,550	116,859	2,489	85,863	114,751	97,023	2,004
1975	130,488	187,731	143,285	3,036	90,097	120,212	103,786	2,118
1976	149,136	214,627	161,058	3,378	94,254	125,902	110,726	2,212
1977	167,006	242,836	187,617	3,900	98,062	131,614	117,479	2,307
1978	186,066	270,731	222,575	4,482	101,615	137,438	123,761	2,357
1979	214,373	309,926	259,187	5,041	105,244	143,433	130,177	2,361
1980 (1)	241,610	351,888	299,476	5,714	109,293	149,874	137,342	2,387
1981 (2)	286,033	417,958	352,902	6,569	113,476	156,891	145,150	2,448

Source Fixed Capital Flows and Stocks Statistics Canada Catalogue 13-568 and Construction Divisin, Statistics Canada.

(1) Preliminary (2) Expected

Table 3.6

Gross Fixed Capital Stock (Excluding Housing)
by Major Asset Classes, Manufacturing and Non-Manufacturing, 1926-1981

(millions of constant 1971 dollars)

Year	Manufacturing Industries			Non-manufacturing industries		
	Building Construction	Engineering Construction	Machinery and Equipment	Building Construction	Engineering Construction	Machinery and Equipment
1926	4,507	721	5,868	12,766	20,242	10,419
1927	4,656	752	5,929	13,112	20,868	10,476
1928	4,878	80[illegible]	5,988	13,545	21,647	10,639
1929	5,139	873	6,020	14,059	22,627	11,025
1930	5,341	932	6,041	14,576	23,718	11,514
1931	5,436	968	6,016	14,974	24,738	11,701
1932	5,459	982	5,883	15,207	25,425	11,431
1933	5,451	988	5,659	15,309	25,785	10,944
1934	5,440	996	5,393	15,380	26,091	10,493
1935	5,432	1,005	5,146	15,481	26,495	10,093
1936	5,451	1,014	4,961	15,619	26,920	9,802
1937	5,516	1,030	4,848	15,771	27,334	9,775
1938	5,578	1,050	4,756	15,918	27,668	9,870
1939	5,598	1,061	4,662	16,097	27,878	9,913
1940	5,671	1,076	4,654	16,398	28,059	9,964
1941	5,864	1,098	4,797	16,856	28,408	10,094
1942	6,133	1,125	4,969	17,411	28,880	10,275
1943	6,330	1,141	5,047	17,955	29,559	10,511
1944	6,405	1,141	5,073	18,355	30,191	10,943
1945	6,476	1,141	5,116	18,652	30,573	11,381
1946	6,608	1,158	5,280	18,978	31,087	11,815
1947	6,805	1,209	5,662	19,395	31,837	12,610
1948	7,002	1,284	6,177	19,958	32,803	13,752
1949	7,163	1,345	6,655	20,625	34,018	15,006
1950	7,280	1,384	7,042	21,339	35,414	16,338
1951	7,435	1,431	7,520	22,182	36,924	17,778
1952	7,669	1,512	8,184	23,158	38,701	19,291
1953	7,893	1,623	8,924	24,267	40,667	20,962
1954	8,063	1,746	9,620	25,514	42,557	22,589
1955	8,240	1,892	10,291	26,869	44,473	23,995
1956	8,529	2,052	11,183	28,328	46,839	25,491
1957	8,856	2,225	12,249	29,846	49,985	27,044
1958	9,072	2,400	13,119	31,387	53,395	28,449
1959	9,245	2,547	13,816	33,067	56,436	29,828
1960	9,465	2,662	14,582	34,851	59,209	31,228
1961	9,666	2,747	15,357	36,616	62,070	32,459
1962	9,848	2,835	16,054	38,502	64,839	33,530
1963	10,041	2,913	16,718	40,475	67,478	34,608
1964	10,314	2,964	17,574	42,463	70,482	35,865
1965	10,770	3,028	18,798	44,759	73,723	37,411
1966	11,381	3,134	20,366	47,547	77,066	39,389
1967	11,944	3,277	21,971	50,494	80,478	41,894
1968	12,374	3,464	23,244	53,382	83,813	44,595
1969	12,810	3,678	24,385	56,175	87,214	47,449
1970	13,332	3,923	25,736	58,851	90,940	50,335
1971	13,822	4,209	27,155	61,651	95,258	53,234
1972	14,193	4,487	28,459	64,541	99,992	56,632
1973	14,580	4,755	29,809	67,496	104,850	60,813
1974	15,095	5,057	31,328	70,768	109,694	65,695
1975	15,633	5,435	32,889	74,464	114,778	70,897
1976	16,063	5,826	34,415	78,190	120,076	76,310
1977	16,482	6,168	35,843	81,580	125,446	81,63[illegible]
1978	16,852	6,476	36,985	84,764	130,962	86,777
1979	17,221	6,701	38,079	88,022	136,732	92,097
1980 (1)	17,727	6,863	39,614	91,566	143,011	97,729
1981 (2)	18,243	7,095	41,581	95,233	149,796	103,569

Source Fixed Capital Flows and Stocks Statistics Canada Catalogue 13-568 and Construction Division, Statistics Canada.

(1) Preliminary (2) Expected

Table 3.7

Provincial Non-Residential Gross Stock, All Industries
Manufacturing and Non-Manufacturing, Selected Years
(Millions of 1971 constant dollars)

	1955	1960	1965	1970	1975	1980 (1)	1981 (2)
				(Total all industries)			
Newfoundland	1,428	1,928	3,035	4,672	6,849	8,325	8,602
Prince Edward Island	588	719	866	989	1,165	1,363	1,402
Nova Scotia	3,852	4,610	5,437	7,215	9,403	11,197	11,658
New Brunswick	3,787	4,523	5,233	6,523	8,396	10,725	11,129
Quebec	26,374	35,182	44,518	55,863	71,384	89,318	92,607
Ontario	41,540	54,351	66,419	85,746	110,860	134,822	139,806
Manitoba	6,669	8,396	9,993	12,455	15,322	18,252	18,682
Saskatchewan	8,191	10,164	12,025	14,687	17,061	20,678	21,630
Alberta	11,973	16,198	20,710	27,193	35,870	52,821	57,884
British Columbia	12,371	17,020	21,322	28,855	38,086	47,860	50,575
				(Manufacturing)			
Newfoundland	100	155	246	416	732	832	866
Prince Edward Island	17	18	24	30	39	53	54
Nova Scotia	442	512	650	1,176	1,837	2,039	2,102
New Brunswick	456	591	738	1,065	1,534	1,854	1,903
Quebec	5,447	7,092	8,607	11,051	13,496	15,306	15,790
Ontario	10,382	13,345	16,313	21,493	26,590	32,249	33,551
Manitoba	517	748	876	1,193	1,415	1,531	1,537
Saskatchewan	272	361	421	570	683	829	863
Alberta	1,080	1,431	1,590	1,940	2,788	4,066	4,420
British Columbia	2,435	3,332	4,107	5,470	6,581	7,383	7,834
				(Non-manufacturing)			
Newfoundland	1,328	1,773	2,789	4,256	6,117	7,492	7,736
Prince Edward Island	571	701	843	960	1,126	1,310	1,346
Nova Scotia	3,409	4,098	4,788	6,039	7,566	9,157	9,556
New Brunswick	3,331	3,932	4,495	5,458	6,863	8,871	9,226
Quebec	20,927	28,090	35,911	44,812	57,888	74,012	76,817
Ontario	31,157	41,006	50,106	64,253	84,270	102,573	106,255
Manitoba	6,152	7,648	9,116	11,263	13,907	16,721	17,145
Saskatchewan	7,919	9,803	11,604	14,118	16,378	19,849	20,767
Alberta	10,893	14,766	19,120	25,252	33,082	48,755	53,463
British Columbia	9,936	13,689	17,215	23,385	31,505	40,477	42,741

Source Construction Division, Statistics Canada

(1) Preliminary (2) Expected

Table 3.8

Service Lives in Years of Fixed Capital Assets in Manufacturing and Non-Manufacturing Industries

Industry	Building Construction	Engineering Construction	Machinery and Equipment	Capital Items cha to Current Expens
Agriculture	40	"	(1)	(1)
Forestry	20	30	10	"
Fishing	(2)	25	(2)	(2)
Mines, quarries, oil wells	25	30	20	"
Foods and beverages	50	55	29	5
Tobacco products	50	55	15	5
Rubber and plastic products	50	55	15	5
Leather products	50	55	15	5
Textiles	45	50	26	5
Knitting mills	30	"	21	5
Clothing	30	"	21	5
Wood products	30	35	26	5
Furniture and fixtures	30	"	26	5
Paper and allied industries	50	55	22	5
Printing, publishing and allied industries	50	55	30	5
Primary metals	40	45	22	5
Metal fabricating	45	50	21	5
Machinery	45	50	21	5
Transportation equipment	40	45	30	5
Electrical products	40	45	22	5
Non-metallic mineral products	35	40	26	5
Petroleum and coal products	35	40	26	5
Chemicals and chemical industries	50	55	22	5
Miscellaneous manufacturing	30	35	13	5
Construction industries	25	30	10	"
Air transport	40	50	10	5
Railway transport	50	55	28	5
Water transport	50	50	35	5
Motor transport	60	65	10	5
Urban and suburban transport	50	55	(3)	5
Pipelines	50	50	15	"
Toll highways and bridges	50	75	15	"
Grain elevators	75	"	25	5
Warehousing	50	"	25	"
Broadcasting	50	30	15	5
Telephone service	50	55	25	5
Electric power and gas distribution	50	55	35	5
Water systems	50	70	25	5
Retail and wholesale trade	50	55	20	5
Finance, insurance and real estate	50	"	15	"
Schools	50	"	20	"
Universities	50	"	20	"
Hospitals	50	"	15	"
Other institutions	50	"	20	"
Churches	75	"	25	"
Commercial services	50	15	15	6
Federal government	50	55	20	"
Provincial governments	50	55	15	"
Municipal government	50	55	20	"

(1) Farm machinery 15, passenger vehicles 6, commercial vehicles 10.
(2) Vessels in fishing 25, boats 14, gear 3.
(3) Buses 10, street cars 28.

Source Fixed Capital Flows and Stocks, Statistics Canada Catalogue number 13-211.

Table 3.9

Class of Property and Schedule of Capital Cost Allowance Rates, 1979 (1)

Class	1 - 4%	Class	20 - 20%
	2 - 6%		21 - 50%
	3 - 5%		22 - 50%
	4 - 6%		23 -100%
	5 - 10%		24 - 50%
	6 - 10%		25 -100%
	7 - 15%		26 - 1%
	8 - 20%		27 - 50%
	9 - 25%		28 - 30%
	10 - 30%		29 - 50%
	11 - 35%		30 - 40%
	12 -100%		31 - 5%
	16 - 40%		32 - 10%
	17 - 8%		33 - 15%
	18 - 60%		34 - 50%
	19 - 50%		35 - 7%

(1) Source Canada Master Tax Guide Chapter IV. Class rates for specific items may change to another rate if special circumstances of use permit. Thus the Guide should be carefully studied as well as the various relevant Revenue Canada interpretation, information or regulation bulletins.

Table 3.10

Demand Distribution of Gross Rents - 1976

Input-Output Commodity Class		Intermediate Inputs	Other Final Demand (1)	Gross Output
		(current $ 000,000)		
55200	Rental of office equipment	109	60	169
55700	Imputed rent, owner occupied dwellings	-	9,976	9,976
55800	Cash residential rents	-	4,480	4,480
55900	Other rent	3,928	659	4,587
57500	Rental of data processing equipment	641	241	881
57700	Rental of automobiles and trucks	593	241	834
57900	Rental of machinery and equipment	942	273	1,215
		(constant 1971 $ 000,000)		
55200	Rental of office equipment	96	52	148
55700	Imputed rent, owner occupied dwellings	-	6,913	6,913
55800	Cash residential rents	-	3,184	3,184
55900	Other rent	2,784	467	3,251
57500	Rental of data processing equipment	1,092	410	1,502
57700	Rental of automobiles and trucks	363	148	511
57900	Rental of machinery and equipment	622	184	806

Source Input-Output Division, Statistics Canada.

(1) Includes consumer and government demand as well as export less import payments.

Table 3.11

Industries Paying and/or Receiving Gross Rents in Excess of $10 million, 1976. (Input-Output Table Commodity Class 55,900 Only)

1 - 0 Industries		Intermediate Input Gross Rents Paid	Gross Rents Received (1)
Number	Title	($ 000,000)	
00100	Agriculture	248.1	10.4
00900	Petroleum and gas mining	36.5	1.6
05800	Clothing industries	33.3	2.4
06500	Household furniture manufacturers	11.7	.8
07300	Printing and publishing	34.7	5.1
08600	Metal stamping, pressing and coating	15.9	1.9
09100	Miscellaneous metal fabricating	10.1	.1
09300	Miscellaneous machinery and equipment mfg.	13.4	1.4
10600	Communications equipment mfg.	12.0	.1
12100	Petroleum refineries	13.5	53.1
12900	Manufacturers of industrial chemicals	11.7	.1
13100	Scientific and professional equipment mfg.	16.7	.1
13800	Repair construction	18.2	-
13900	Residential construction	35.0	-
14000	Non-residential construction	17.7	-
14300	Dams and irrigation projects	18.3	-
14500	Other engineering construction	16.6	-
14600	Construction - other activities	4.2	175.7
14700	Air transport	27.1	1.3
14800	Services incidental to transportation	69.2	3.0
14900	Water transport	17.4	1.5
15000	Railway transport	16.6	18.2
15100	Truck transport	33.9	5.5
15700	Storage	22.5	7.4
15800	Radio and television broadcasting	15.1	1.1
15900	Communication industries, n.e.s.	37.3	.9
16100	Electric power	1.4	10.0
16400	Wholesale trades	339.3	50.5
16500	Retail trades	979.1	66.1
16800	Banks and credit unions	142.1	2.7
16900	Insurance	124.7	219.9
17000	Other finance insurance and real estate	280.4	3,791.8
17100	Education and related services	21.1	-
17300	Health services	126.0	4.8
17400	Motion picture theatres	14.7	3.2
17500	Other recreational services	55.0	7.8
17600	Professional services to business	110.0	3.7
17700	Advertising services	13.0	.2
17800	Laundries and cleaners	25.6	3.0
17900	Accommodation and food services	292.9	42.4
18000	Other personal services	47.4	3.6
18300	Miscellaneous services to business and persons	130.5	31.4

Source Input-Output Division, Statistics Canada

(1) Includes rents received from consumers and governments as well as industry.

Table 3.12

Industries Paying Gross Rents (Intermediate Inputs) in Excess of $10 Million in 1971 Constant Prices. (1971 - 1977)

1 - 0 Industries		1971	1972	1973	1974	1975	1976	1977
Number	Title	('000,000 1971 dollars)						
00100	Agriculture	90	92	159	162	172	175	172
00900	Petroleum and gas mining	15	18	26	29	27	26	27
05800	Clothing industries	24	23	23	24	24	24	23
07300	Printing and publishing	24	24	23	25	25	25	24
08600	Metal stamping, pressing, coating	6	8	9	11	11	11	11
12100	Petroleum refining	10	10	10	10	10	10	11
13100	Scientific and professional equipment	12	12	11	12	12	12	11
13800	Repair construction	7	8	9	10	12	13	13
13900	Residential construction	11	13	15	19	22	25	32
14000	Non-residential construction	8	8	8	10	11	12	14
14300	Dams and irrigation projects	11	11	12	12	12	13	13
14500	Other engineering construction	5	5	7	10	10	12	11
14700	Air transport	18	16	17	18	20	19	19
14800	Services incidental to transportation	18	25	25	35	43	49	60
14900	Water transport	5	6	7	9	12	12	12
15000	Railway transport	12	11	13	14	12	12	11
15100	Truck transport	30	31	31	31	27	24	21
15700	Storage	7	8	8	8	16	16	15
15800	Radio and television broadcasting	10	9	9	8	10	11	11
15900	Communication industries N.E.S.	15	15	17	27	24	26	27
16400	Wholesale trades	190	201	208	234	243	239	252
16500	Retail trades	512	561	588	662	661	692	703
16800	Banks and credit unions	59	60	58	67	92	100	111
16900	Insurance	67	73	76	82	83	88	88
17000	Other, finance, insurance and real estate	141	153	187	206	207	198	234
17100	Education and related services	4	4	8	10	12	15	16
17300	Health services	71	76	80	86	84	89	89
17500	Other recreational services	24	25	30	31	35	39	36
17600	Professional services to business	63	64	67	75	76	78	78
17800	Laundries and cleaners	14	15	15	17	17	18	17
17900	Accommodation and food services	114	140	161	174	182	207	221
18000	Other personal services	28	30	29	29	31	34	35
18300	Miscellaneous services to business and persons	52	58	59	68	83	92	94
Total intermediate inputs (1)		1,962	2,121	2,330	2,562	2,659	2,765	2,865

Source 1 - 0 tables, Statistics Canada

(1) Before balancing adjustments

(1) Before balancing adjustments

Table 3.13

Industries Receiving Gross Rents in Excess of $10 Million in Constant 1971 Prices, 1971 - 1977

1 - 0 Industries		1971	1972	1973	1974	1975	1976	1977
Number	Title	('000,000 1971 dollars)						
12100	Petroleum refineries	26	36	31	32	37	38	35
14600	Construction, other activities	89	108	111	114	111	124	99
15000	Railway transport	12	13	13	13	13	13	13
16400	Wholesale trades	41	40	40	41	32	36	29
16500	Retail trades	53	59	64	60	53	47	37
16800	Banks and credit unions	11	9	6	4	2	2	2
16900	Insurance	109	126	131	139	126	155	161
17000	Other finance, insurance and Real estate	1,765	1,908	2,124	2,380	2,580	2,680	2,877
17900	Accommodation and food services	35	35	34	33	31	30	29
18300	Miscellaneous services to business and persons	21	22	22	22	22	22	25
Total all gross rents (1)		2,249	2,449	2,678	2,944	3,118	3,239	3,393

Source 1 - 0 tables Statistics Canada

(1) Before balancing adjustments

Table 3.14

Net Leases Written by Contract Terms

	1978	1979
	($000,000)	
2 years and under	25	45
3 and 4 years	169	290
5 and 6 years	277	420
7 to 10 years inclusive	72	69
Over 10 years	42	192

Table 3.15

Corporate Ownership, 1979

Percentage of Foreign Ownership	Number of Corporations	Net Lease Receivables ($000,000)
0 - 25	40	1,736
26 - 50	5	425
51 - 99	3	309
100	40	924
Total	88	3,393

Table 3.16

Finance Leasing by type of Equipment, 1978 and 1979

Type of Equipment	Net Value of Lease Receivables at Year-end			Cost of Equipment Purchased for Lease During the Year		
	1978	1979	Percentage Change from 1978	1978	1979	Percentage Change from 1978
	$'000	$'000	%	$'000	$'000	%
Aircraft & Related Equipment	406,657	488,771	20.19	11,043	111,816	912.55
Automotive - Buses & Trucks	209,058	291,043	39.22	83,579	130,870	56.58
Automotive - Passenger Cars	304,566	376,535	23.63	146,096	187,018	28.01
Communications	12,271	31,436	156.18	6,195	18,802	203.50
Computer	428,556	483,289	12.77	105,014	125,676	19.68
Construction	159,300	207,015	29.95	66,580	104,194	56.49
Forestry	33,661	34,422	2.26	7,671	8,405	9.57
Hotel, Restaurant, Apartment	8,467	18,303	116.17	959	5,551	478.83
Manufacturing	74,809	86,204	15.23	19,354	30,828	59.28
Material Handling & Processing	64,882	78,668	21.25	17,336	16,247	- 6.28
Medical & Health Services	59,627	77,761	30.41	14,133	22,981	62.61
Mining & Petroleum	73,037	154,155	111.06	5,904	86,389	1363.23
Office Equipment & Furnishings	253,003	303,757	20.06	67,413	86,170	27.82
Railway Rolling Stock	170,669	167,211	- 2.03	126	-	-100.00
Retailing	49,530	64,081	29.38	4,023	4,314	7.23
Water Vessels	177,996	184,344	3.57	28,645	8,542	- 70.18
Other	83,306	101,863	22.28	28,360	50,752	78.96
Total	2,569,395	3,148,858	22.55	612,431	998,555	63.05
Number of companies	83	83		78	78	
Note: Same corporations for both years.				Note: Same corporations for both years.		

Source Business Finance Division, Statistics Canada

Table 3.17

Finance Leasing by Province, 1978 and 1979

Province	Net Value of Lease Receivables at Year-end			Cost of Equipment Purchased for Lease During the Year		
	1978	1979	Percentage Change from 1978	1978	1979	Percentage Change from 1978
	$'000	$'000	%	$'000	$'000	%
Newfoundland	41,157	42,373	2.95	8,405	4,428	- 47.32
Prince Edward Island	2,498	2,911	16.53	541	624	15.34
Nova Scotia	57,829	78,190	35.21	8,442	55,316	555.25
New Brunswick	33,396	74,423	122.85	7,164	9,246	29.06
Quebec	599,535	677,522	13.01	97,495	138,704	42.27
Ontario	1,037,091	1,202,592	15.96	264,801	322,236	21.69
Manitoba	45,465	57,348	26.14	6,554	9,549	45.07
Saskatchewan	17,814	22,469	26.13	6,166	7,855	27.39
Alberta	254,252	355,170	39.69	66,970	114,115	70.40
British Columbia	324,721	453,845	39.76	49,613	169,595	241.84
NWT & Yukon	1,086	1,782	64.09	517	607	17.41
Total	2,414,844	2,968,625	22.93	516,668	832,275	61.09
Number of companies	82	82		76	76	

Note: Same corporations for both years.

Note: Same corporations for both years.

Source Business Finance Division, Statistics Canada

Table 3.18

Selected Financial Intermediaries Lease Contracts
Receivable and Revenue 1978 and 1979 by quarters ($000,000)

	Lease Contracts Receivable							
	1978				1979			
	1	2	3	4	1	2	3	4
Trust companies	184	187	189	190	192	196	199	208
Mortgage companies	66	66	65	64	63	63	61	60
Financial corporations	1,041	1,059	1,086	1,137	1,159	1,197	1,224	1,299
Finance leasing companies	771	796	788	850	902	1,029	1,130	1,276
	Revenue Earned from Lease Contracts							
Trust companies	1	1	1	1	1	2	2	2
Mortgage companies	1	1	1	1	1	1	1	1
Financial corporations	26	26	27	27	29	30	32	33
Finance leasing companies	27	28	27	29	31	34	36	41

Source Asset and revenue statements Financial Institutions
Statistics Canada Catalogue 61-006

Table 3.19

Accumulated Capital Expenditures by Province for Water and Air Pollution Control, 1970 - 1975

Province	Water	Air ($000,000)	Total
Nova Scotia	4.2	.8	5.0
New Brunswick	4.3	.3	4.5
Quebec	10.6	20.5	31.1
Ontario	129.1	99.5	228.6
Manitoba	1.4	2.2	3.6
Saskatchewan	5.0	2.6	7.6
Alberta	31.2	36.7	67.9
British Columbia	37.0	27.7	64.7
Total Canada	223.1	190.1	413.2

Source Water and Air Pollution Abatement Expenditures Un-catalogued publication. Business Finance Division, Statistics Canada, August 1978.

Table 3.20

Accumulated Capital Expenditures by Industry for Water and Air Pollution Control 1970-75.

Industry	Water	Air ($000,000)	Total
Agriculture, forestry and fishing	2.2	.1	2.3
Mining	20.5	31.5	52.0
Manufacturing	187.2	140.1	327.3
Transportation, communication and utilities	8.3	13.7	22.0
Wholesale and retail trade	2.0	3.8	5.8
All other industries	2.9	.9	3.8
Total	223.1	190.1	413.2

Source Human Activity and the Environment
Statistics Canada, Catalogue 11-509,
March 1978.

Table 3.21

Percentage Share of Accumulated Capital Cost for Water and Air Pollution Control, 1970-1975 by Industry

Industry	Water	Air
	(percentage)	
Mining:		
Mineral fuel mining	6	17
Non-metal mining	-	4
Manufacturing:		
Food and beverage	3	5
Wood	-	6
Pulp and paper mills	43	11
Iron and steel mills	10	13
Petroleum refining	3	2
Chemical industries	21	4
Cement manufacturers	-	7
Total all industries	100	100

Table 3.22

Capital Cost Allowances by Tax Class for Selected Industry Groups, 1972, 1975 and 1978 ($'000,000)

Industry	Class 24			Class 27			Class 29		
	1972	1975	1978	1972	1975	1978	1972	1975	1978
Metal mining	.2	4.0	1.3	-	2.4	.8	-	32.3	50.9
Mineral fuels	1.6	2.0	3.0	2.0	5.7	.9	2.4	58.7	113.8
Total mining	1.9	6.1	4.3	2.4	9.2	1.9	2.4	97.2	176.2
Food manufacturing	1.6	2.8	1.5	1.8	1.5	1.4	9.7	119.3	164.1
Beverages	1.0	.1	.1	.7	.4	-	1.5	41.6	48.2
Textile mills	.4	1.9	-	.5	.4	.1	7.3	61.2	98.4
Wood industries	2.7	1.2	1.3	2.5	1.9	1.0	14.6	74.5	182.7
Paper and allied industries	18.9	30.8	21.1	1.6	10.1	8.6	13.3	238.3	429.3
Printing and publishing	-	-	-	-	-	-	1.8	44.5	78.2
Primary metals	9.4	13.3	4.7	13.0	19.5	7.0	20.7	164.8	197.4
Metal fabricating	1.3	1.1	.1	.2	.6	.6	9.8	131.4	129.3
Machinery	-	.2	-	.3	.7	.1	2.6	54.0	40.7
Transport equipment	2.1	1.6	.5	2.1	1.0	.4	17.4	109.5	209.7
Electrical products	1.1	.3	-	.1	.1	1.9	9.2	49.6	76.3
Non-metallic mineral products	.9	.2	1.0	4.6	5.2	2.1	15.9	75.1	78.0
Petroleum and coal	10.1	7.8	4.2	8.2	9.5	1.2	53.9	325.4	577.8
Chemical products	17.4	3.6	.5	3.8	2.0	3.3	17.0	184.9	264.1
Total manufacturing	67.1	65.4	35.7	39.9	53.5	28.0	204.9	1,783.6	2,702.9
Total all industries	70.9	72.2	41.9	47.4	67.1	35.9	214.2	2,003.3	3,023.1

Table 3.23

Pollution Abatement Expenditures
by Large Firms 1977-81

	Number of Firms Reporting Item	Pollution Abatement Expenditures ($000,000)
1977	99	325
1978	109	279
1979	110	517
1980	117	583
1981	117	767

Source Capital Expenditures Group, Department of Industry, Trade and Commerce

Table 3.24

Selected U.S. Pollution Abatement and Control Expenditures 1972-76

	($000,000,000)				
	1972	1973	1974	1975	1976
Total abatement and control	18.7	22.4	26.2	30.9	34.7
Total pollution abatement	17.5	21.0	24.6	29.2	32.8
Persons	1.6	2.2	2.7	3.7	4.4
Business	11.1	13.4	15.3	17.8	19.9
Capital account	5.7	7.0	7.3	8.4	9.0
Current account	5.4	6.4	8.0	9.4	10.9
Governments	4.8	5.4	6.5	7.7	8.5
Regulation and monitoring by governments	.3	.5	.6	.6	.7
Research and development	.8	.9	1.0	1.1	1.2
Business and private	.5	.6	.6	.6	.6
Governments	.3	.3	.4	.5	.6

Source Survey of Current Business, February 1978.

Table 3.25

Capital Expenditures[1] by Country of Control, for Selected Industries, 1969-1980

Industry Group	Year	Canada	United States	Other Foreign	Total Foreign	Total Canada and Foreign
			($000,000)			
Manufacturing, Total	1969	1,079	978	278	1,255	2,334
	1970	1,360	1,144	408	1,552	2,912
	1971	"	"	"	"	"
	1972	1,338	959	331	1,289	2,628
	1973-5	"	"	"	"	"
	1976	3,000	1,851	614	2,465	5,465
	1977	3,147	2,292	641	2,933	6,081
	1978	3,209	2,326	643	2,969	6,178
	1979	3,805	2,683	832	3,515	7,320
	1980	4,346	3,883	842	4,725	9,072
Food and beverages	1969	188	57	13	70	258
	1970	228	54	23	77	305
	1971	"	"	"	"	"
	1972	185	63	34	97	282
	1973-5	"	"	"	"	"
	1976	253	100	56	156	409
	1977	312	152	41	193	506
	1978	333	161	50	210	543
	1979	441	195	67	262	703
	1980	477	189	90	279	756
Paper and allied products	1969	125	155	97	252	377
	1970	190	167	175	342	532
	1971	"	"	"	"	"
	1972	190	207	51	258	448
	1973-5	"	"	"	"	"
	1976	327	287	75	362	689
	1977	381	316	71	387	768
	1978	415	232	31	262	677
	1979	478	310	49	359	837
	1980	620	429	57	487	1,107
Transportation equipment	1969	27	143	8	151	178
	1970	35	214	4	219	254
	1971	"	"	"	"	"
	1972	25	101	6	107	132
	1973-5	"	"	"	"	"
	1976	x	x	x	147	206
	1977	49	x	x	296	345
	1978	72	322	11	333	405
	1979	119	518	23	541	660
	1980	144	1,268	15	1,283	1,427
Non-metallic mineral products	1969	71	17	32	50	121
	1970	100	12	23	35	135
	1971	"	"	"	"	"
	1972	59	14	56	71	130
	1973-5	"	"	"	"	"
	1976	100	53	89	142	242
	1977	79	73	127	200	279
	1978	106	93	81	174	280
	1979	178	62	162	225	403
	1980	151	77	141	218	370
Petroleum and coal products	1969	7	85	38	123	130
	1970	2	157	72	229	231
	1971	"	"	"	"	"
	1972	5	166	73	239	244
	1973-5	"	"	"	"	"
	1976	x	259	x	x	344
	1977	21	310	36	346	367
	1978	32	243	40	283	315
	1979	x	130	x	x	279
	1980	81	x	x	276	357
Chemical and allied industries	1969	79	136	21	158	237
	1970	113	103	46	149	262
	1971	"	"	"	"	"
	1972	80	102	37	139	219
	1973-5	"	"	"	"	"
	1976	719	359	114	473	1,192
	1977	720	432	178	611	1,331
	1978	642	489	216	705	1,347
	1979	475	550	164	714	1,190
	1980	459	511	131	642	1,101

Table 3.25 (cont'd)

Industry Group	Year	Canada	United States	Other Foreign	Total Foreign	Total Canada and Foreign
				($000,000)		
Mining, Total	1969-76	"	"	"	"	"
	1977	1,309	2,061	495	2,556	3,865
	1978	1,626	1,801	476	2,277	3,903
	1979	2,089	2,442	742	3,184	5,273
	1980	2,984	3,268	913	4,181	7,165
Metal mining	1969-76	"	"	"	"	"
	1977	678	189	113	301	979
	1978	361	x	x	216	577
	1979	454	x	x	418	873
	1980	585	x	x	672	1,256
Non-metal mining	1969-76	"	"	"	"	"
	1977	157	142	142	284	441
	1978	205	x	x	219	424
	1979	173	x	x	254	427
	1980	259	x	x	244	502
Petroleum and gas mining	1969-76	"	"	"	"	"
	1977	474	1,731	241	1,971	2,445
	1978	1,061	1,535	308	1,842	2,903
	1979	1,462	2,033	479	2,512	3,973
	1980	2,141	2,720	545	3,265	5,407
Forestry	1969-76	"	"	"	"	"
	1977	132	78	11	89	221
	1978	151	76	14	90	241
	1979	184	103	16	118	303
	1980	189	112	23	135	324

(1) Excludes capital items charged to current account.

Symbols used: " not available
x confidential

Sources 1969 and 1970 data are from Domestic and Foreign Control of Manufacturing Establishments in Canada, Statistics Canada Catalogue no. 31-401; 1976 data are from Investment Statistics, Statistics Canada Service Bulletin, Catalogue no. 61-007, July, 1978; 1977 to date data are from Domestic and Foreign Control of Forestry, Mining and Manufacturing Capital Expenditure in Canada, Statistics Canada Catalogue no. 61-215.

Table 3.26

Capital Expenditure by Country of Control (2) by Selected Provinces for Manufacturing 1976-1980

	Year	Canada	United States	Other Foreign	Total Foreign	Total Canada and Foreign
				($000,000)		
Quebec	1976	681	282	169	451	1,131
	1977	744	305	133	438	1,182
	1978	804	276	199	475	1,280
	1979	856	355	266	621	1,477
	1980	949	447	215	662	1,612
Ontario	1976	1,668	1,118	230	1,349	3,016
	1977	1,618	1,466	275	1,742	3,359
	1978	1,420	1,377	289	1,666	3,086
	1979	1,626	1,560	293	1,854	3,480
	1980	1,844	2,714	296	3,010	4,854
Alberta	1976	171	220	66	286	457
	1977	192	272	46	318	511
	1978	305	388	56	444	749
	1979	296	389	120	510	806
	1980	269	250	186	436	705
British Columbia	1976	220	131	82	213	433
	1977	321	159	112	271	593
	1978	392	184	36	219	611
	1979	555	235	52	286	842
	1980	814	340	50	390	1,204

Sources 1969 and 1970 data are from Domestic and Foreign Control of Manufacturing Establishments in Canada, Statistics Canada Catalogue no. 31-401; 1976 data are from Investment Statistics, Statistics Canada Service Bulletin. Catalogue no. 61-007, July, 1978; 1977 to date data are from Domestic and Foreign Control of Forestry, Mining and Manufacturing Capital Expenditure in Canada. Statistics Canada, Catalogue no. 61-215.

Table 3.27

Foreign Long-term Direct Investment in Canada, 1949-1980

Year	Owned in United States	Owned in United Kingdom	Owned in All Other Countries	Total
1949	3,095	428	63	3,586
1950	3,426	468	81	3,975
1951	3,896	497	127	4,520
1952	4,530	544	144	5,218
1953	5,206	612	185	6,003
1954	5,787	759	218	6,764
1955	6,513	890	325	7,728
1956	7,392	1,048	428	8,868
1957	8,472	1,163	494	10,129
1958	9,045	1,296	539	10,880
1959	9,912	1,384	610	11,906
1960	10,549	1,535	788	12,872
1961	11,284	1,613	840	13,737
1962	12,006	1,706	948	14,660
1963	12,785	1,761	956	15,502
1964	12,959	1,933	1,069	15,961
1965	14,059	2,033	1,264	17,356
1966	15,570	2,046	1,392	19,008
1967	17,000	2,152	1,547	20,699
1968	18,510	2,310	1,714	22,534
1969	19,959	2,426	2,039	24,424
1970	21,403	2,503	2,452	26,358
1971	22,443	2,715	2,760	27,918
1972	23,680	2,826	3,049	29,555
1973	26,143	3,158	3,462	32,763
1974	29,045	3,533	3,681	36,259
1975	29,666	3,629	4,094	37,389
1976	31,917	3,968	4,426	40,311
1977	34,720	4,112	4,851	43,683
1978	38,348	4,476	5,404	48,228
1979	40,600	4,700	5,700	51,000
1980	43,500	5,000	6,000	54,500

Data Sources Statistics Canada catalogue number 67-202.
Table 17 and Daily Bulletin August 7, 1981.
1979 and 1980 are Statistics Canada estimates.

Table 3.28

Selected Capital Stock Related Data for Agriculture

	1941	1951	1961	1971
(i) Farms and farmland:				
Number of farms: (000)				
Canada	732.9	623.1	480.9	366.1
Atlantic region (including Newfoundland)	77.1	63.7	33.4	17.1
Central provinces	332.9	284.3	217.1	156.0
Prairie provinces	296.5	248.7	210.4	174.7
British Columbia	26.4	26.4	19.9	18.4
Average size of farms: (acres)				
Canada	237	279	359	463
Atlantic region	116	125	163	205
Central provinces	122	132	151	172
Prairie provinces	405	498	617	765
British Columbia	153	178	226	316
Improved farmland (000,000 acres)				
Canada	91.6	96.9	103.4	108.1
Atlantic region	2.8	2.3	1.8	1.4
Central provinces	22.4	21.5	19.9	17.3
Prairie provinces	65.5	71.8	80.4	87.7
British Columbia	.9	1.1	1.3	1.8
(ii) Other related data for Canada: ('000)				
Number of tractors and combines in use	178.9	490.2	705.4	759.4
Number of milk cows	2,626	2,908	2,990	2,257
Number of other cattle	4,891	5,463	8,952	11,021
Number of pigs	6,081	4,916	5,333	8,107
Number of sheep	2,840	1,479	1,564	861
Number of horses	2,789	1,307	512	354
Number of hens and chickens	58,994	64,615	69,612	87,537
Number of other poultry	4,476	3,319	8,383	10,512

Sources for (i) 1951 Census of Agriculture, Vol IV (1 and 2) and
1971 Census of Agriculture, Vol IV (1-3). Statistics Canada

for (ii) 1941 Census of Canada, Vol I
1951 Census of Canada, Vol VI (1)
1971 Census of Canada, Catalogue 96-701. Statistics Canada

Table 3.29

Forest Lands in Canada 1976-1977
(Thousands of square kilometres)

Forest land for production	3,318	(1)
Reserved by law	96	
Total - Canada	3,414	
Newfoundland	338	
Prince Edward Island	--	
Nova Scotia	41	
New Brunswick	66	
Quebec	614	(1)
Ontario	570	
Manitoba	257	
Saskatchewan	140	
Alberta	341	
British Columbia	521	
Yukon	307	
Northwest Territories	219	

(1) Contains 179,000 km^2 of uncompiled inventory for Quebec.

Source Forestry Inventory of Canada, Canadian Forestry Service Environment Canada

Table 3.30

Number of Canadian Vessels Involved in Marine Fisheries by Tonnage 1963-1976

	Atlantic			Pacific		
	Under 10	10-99	Over 100	Under 10	10-99	Over 100
1963	35,393	2,060	179	"	"	"
1964	35,798	2,172	195	"	"	"
1965	36,757	2,373	237	"	1,484	113
1966	33,752	2,498	273	5,337	1,926	79
1967	32,458	2,569	333	5,515	2,160	95
1968	31,194	2,703	361	5,386	2,206	94
1969	29,254	2,796	356	4,827	2,273	81
1970	29,113	2,905	365	4,576	2,321	78
1971	28,402	2,949	351	4,272	2,359	67
1972	25,409	3,152	321	4,252	2,344	74
1973	"	"	"	4,174	2,334	81
1974	"	"	"	4,402	2,586	96
1975	"	"	"	4,639	2,779	110
1976	15,742	2,677	200	4,556	2,746	87

Source Fisheries Statistics of Canada, Statistics Canada Catalogue 24-201

" not available.

Table 3.31

Road and Highway Mileage in Canada, 1950-1976

	1950	1955	1960	1965	1970	1976
			(miles)			
Canada:						
All roads	567,155	455,404	421,448	448,378[2]	460,422	549,462
Expressways	"	"	"	847[1]	1,680[1]	4,193[3]
Paved roads[1]	24,519[1]	33,240[1]	50,119[1]	61,631[1]	75,647[1]	155,358[3]
Atlantic provinces	2,848	3,735	6,036	8,060	9,276	20,319
Quebec	6,433	8,995	13,804	14,389	16,387	35,212
Ontario	10,102	11,515	16,372	21,518	24,398	42,468
Prairies	2,749	5,657	8,761	12,289	18,269	38,453
B.C. and Territories	2,387	3,338	5,146	5,375	7,317	18,906

Source Road and Street Mileage and Expenditures
Statistics Canada Catalogue 53-201

(1) Excludes urban streets
(2) 1964
(3) Includes municipal roads

" not available

Table 3.32

Miles of Oil and Natural Gas Trunk(1) Pipelines 1950-1979

	Oil	Natural gas	Total
1950	1,158	"	"
1955	4,192	"	"
1960	4,473	6,301	10,774
1965	6,565	14,206	20,771
1970	8,756	19,282	28,038
1974	9,324	25,107	34,431
1975	9,475	25,962	35,437
1976	10,302	27,147	37,449
1977	10,742	28,249	38,991
1978	10,675	28,577	39,263
1979	10,642	28,767	39,409

Source Oil Pipeline Transport Catalogue 55-201
and unpublished data, Statistics Canada

(1) Main transporting lines for crude oil and natural gas.

" not available.

Table 3.33

Electric Transmission Circuit Mileage
by Power Line Voltage, 1956-1978

Voltage	1956	1961	1966	1971	1974	1978
20-99 kilovolts	37,609	41,160	44,457	49,001	49,316	48,033
100-199 kilovolts	12,905	16,723	20,793	25,079	26,225	27,989
200-299 kilovolts	4,397	5,752	8,220	14,690	15,963	19,131
300-399 kilovolts	911 (1)	2,330 (1)	2,710	3,610	4,168	4,346
400-599 kilovolts	"	"	436	1,572	2,908	3,880
Over 600 kilovolts	"	"	623	1,223	2,508	3,097

(1) Includes all lines 300 kilovolts and over

Source Electric Power Statistics, Catalogue
57-202 Statistics Canada

" not available

Table 3.34

Electric Transmission Circuit Mileage
by Power Line Voltage by Province, 1978

Province \ kilovolts	20-99	100-199	200-299	300-399	400-599	over 600
			(miles)			
Newfoundland	1,269	906	1,007	-	-	378
Prince Edward Island	221	40	-	-	-	-
Nova Scotia	1,292	740	361	60	-	-
New Brunswick	1,854	1,167	319	223	-	-
Quebec	2,363	5,173	2,269	3,752	-	2,719
Ontario	9,439	7,554	8,145	3	645	-
Manitoba	4,983	2,443	2,363	-	1,139	-
Saskatchewan	12,830	2,225	1,246	-	-	-
Alberta	9,711	4,345	1,650	-	-	-
British Columbia	3,719	2,786	1,771	308	2,096	-
Yukon	275	305	-	-	-	-
Northwest Territories	177	305	-	-	-	-

Source Electric Power Statistics Vol II 1978
Statistics Canada

Table 3.35

Railroad Motive Power and Rolling Stock, 1950-1979

	Locomotives			Rolling Stock			Total Freight Cars
	Steam	Diesel Electric	Electric	Passenger Cars	Box Cars	Flat Cars	
			(Number)				
1950	4,272	350	33	6,338	122,419	11,263	175,597
1960	403	3,308	41	5,119	111,217	12,645	191,553
1965	-	3,301	22	3,638	105,822	13,475	182,090
1970	-	3,399	18	2,801	101,746	18,043	188,737
1975	-	3,963	14	1,936	92,669	25,722	193,197
1979	-	4,082	14	1,596	79,302	24,785	180,089

Source Railway Transport Part III Statistics Canada
Catalogue 52-209

Table 3.36

Number of Registered Motor Vehicles, 1940-1979

	Passenger Automobiles	Commercial Vehicles	Motorcycles	Total
		(000)		
1940	1,236	251	13	1,501
1950	1,913	643	44	2,600
1960	4,104	1,117	34	5,256
1970	6,602	1,738	157	8,497
1975	8,693	2,177	327	11,197
1976	9,016	2,319	341	11,676
1977	9,509	2,547	372	12,428
1978	9,745	2,771	341	12,857
1979	9,985	2,907	333	13,225

Source Road Motor Vehicles Statistics Canada Catalogue 53-219.

Table 3.37

Number of Dwellings in Canada 1949-1980,
by Type and Ownership
(Thousands)

End of year:	Single Dwellings			Multiple Dwellings			Total All Dwellings		
	Total	Owned	Rented	Total	Owned	Rented	Total	Owned	Rented
1949	2,277	1,857	421	1,090	314	776	3,368	2,171	1,197
1950	2,341	1,940	400	1,132	333	799	3,473	2,274	1,199
1951	2,397	2,004	392	1,167	345	822	3,564	2,349	1,215
1952	2,448	2,054	394	1,193	349	844	3,641	2,403	1,238
1953	2,513	2,115	398	1,235	358	877	3,747	2,473	1,275
1954	2,580	2,179	401	1,282	368	914	3,862	2,547	1,315
1955	2,668	2,261	407	1,341	381	960	4,009	2,642	1,367
1956	2,763	2,362	401	1,397	392	1,004	4,159	2,754	1,405
1957	2,833	2,430	403	1,441	401	1,040	4,274	2,831	1,443
1958	2,918	2,511	407	1,504	415	1,089	4,422	2,927	1,496
1959	3,000	2,590	410	1,566	429	1,137	4,566	3,019	1,548
1960	3,066	2,655	411	1,621	440	1,181	4,686	3,095	1,591
1961	3,127	2,698	430	1,668	443	1,225	4,795	3,140	1,655
1962	3,185	2,752	432	1,726	443	1,283	4,911	3,195	1,716
1963	3,236	2,802	434	1,789	443	1,346	5,025	3,245	1,780
1964	3,293	2,857	436	1,872	446	1,426	5,165	3,023	1,862
1965	3,349	2,911	438	1,959	448	1,512	5,308	3,359	1,949
1966	3,411	2,963	448	2,058	455	1,603	5,469	3,418	2,051
1967	3,478	3,011	467	2,140	460	1,680	5,618	3,471	2,147
1968	3,545	3,060	485	2,245	468	1,777	5,790	3,528	2,262
1969	3,617	3,113	504	2,375	479	1,896	5,992	3,592	2,400
1970	3,680	3,160	520	2,496	484	2,011	6,176	3,644	2,531
1971	3,750	3,231	519	2,625	492	2,133	6,375	3,723	2,652
1972	3,836	3,314	522	2,758	513	2,245	6,594	3,827	2,767
1973	3,934	3,414	520	2,891	588	2,303	6,825	4,003	2,822
1974	4,038	3,515	524	3,028	640	2,388	7,066	4,154	2,912
1975	4,129	3,635	493	3,142	715	2,427	7,270	4,350	2,920
1976	4,243	3,777	466	3,252	743	2,509	7,495	4,520	2,975
1977	4,351	3,877	474	3,385	771	2,615	7,737	4,648	3,089
1978	4,448	3,969	479	3,525	802	2,723	7,973	4,771	3,202
1979	4,552	4,073	480	3,638	817	2,821	8,190	4,889	3,301
1980	4,634	4,168	466	3,722	836	2,886	8,355	5,003	3,352

Source Construction Division, Statistics Canada

Table 3.38

Number of Dwellings in Canada and the Provinces by Type and Ownership, Percentage Change 1949 to 1980 (year-end number of dwellings)

Province of Territory	Total	Owned	Rented	Singles	Multiples
	(percentage change)				
Newfoundland	107.8	86.6	247.0	85.6	221.8
Prince Edward Island	61.6	48.0	122.3	49.4	126.8
Nova Scotia	77.9	63.9	120.2	56.1	158.2
New Brunswick	83.4	84.9	79.6	78.2	97.9
Quebec	160.8	170.8	151.5	163.1	159.2
Ontario	166.0	142.9	214.5	105.4	309.0
Manitoba	83.6	65.1	126.3	53.2	197.0
Saskatchewan	46.9	43.6	55.8	29.3	168.9
Alberta	195.6	153.1	296.4	123.2	538.6
British Columbia	192.6	172.6	234.7	125.2	510.2
Yukon and Northwest Territories (1)	165.3	26.9	326.4	106.7	415.2
Canada	148.1	130.5	180.0	103.5	241.5

Source Statistics Canada

(1) 1956 to 1980 only

Table 3.39

Percentage Composition of Type of Dwellings in Canada 1949 and 1980

Type of Dwelling	1949	1980
Singles	65.8	60.5
Multiples	29.0	33.7
Mobiles	0.1	1.7
Cottages	5.1	4.1
Total	100.00	100.0

Source Statistics Canada

Table 3.40

Mid-year Net[1] Stock of Housing,
Canada and Provinces, 1949-1981

('000,000 constant 1971 dollars)

Year	Nfd.	PEI	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	N.W.T. Yukon	Canada
1949	272	80	749	477	5,371	9,219	1,234	884	1,279	2,135	"	21,700
1950	276	82	769	493	5,628	9,722	1,298	895	1,382	2,251	"	22,795
1951	283	84	790	506	5,898	10,134	1,347	905	1,477	2,342	"	23,764
1952	295	85	810	520	6,181	10,418	1,379	926	1,558	2,402	"	24,575
1953	315	84	832	538	6,529	10,783	1,426	970	1,679	2,486	"	25,642
1954	335	86	858	556	6,922	11,301	1,487	1,031	1,834	2,602	"	27,010
1955	355	87	889	588	7,402	11,974	1,559	1,089	1,990	2,790	"	28,724
1956	380	89	925	633	7,970	12,696	1,640	1,139	2,157	3,027	10	30,664
1957	402	89	960	677	8,454	13,327	1,701	1,189	2,317	3,247	14	32,378
1958	419	89	992	721	8,924	14,014	1,759	1,253	2,502	3,478	18	34,167
1959	436	91	1,036	758	9,431	14,762	1,830	1,334	2,722	3,730	23	36,153
1960	463	96	1,095	783	9,832	15,356	1,897	1,407	2,892	3,944	27	37,790
1961	494	102	1,148	806	10,152	15,838	1,953	1,466	3,026	4,085	32	39,101
1962	517	109	1,189	829	10,509	16,278	1,996	1,530	3,181	4,210	39	40,387
1963	540	117	1,222	846	10,919	16,716	2,035	1,591	3,331	4,367	45	41,728
1964	571	122	1,254	865	11,379	17,269	2,087	1,653	3,459	4,559	51	43,269
1965	601	128	1,289	893	11,865	17,954	2,144	1,729	3,578	4,792	57	45,032
1966	622	135	1,320	925	12,287	18,652	2,190	1,807	3,679	5,040	63	46,720
1967	643	140	1,343	954	12,647	19,329	2,232	1,877	3,783	5,292	70	48,309
1968	677	145	1,370	985	13,009	20,113	2,281	1,953	3,936	5,581	79	50,128
1969	718	151	1,422	1,027	13,408	21,091	2,357	2,026	4,165	5,911	93	52,367
1970	755	160	1,494	1,068	13,817	22,063	2,454	2,063	4,396	6,249	112	54,630
1971	799	177	1,579	1,117	14,303	23,138	2,554	2,074	4,662	6,644	125	57,170
1972	854	199	1,661	1,195	14,894	24,554	2,672	2,106	5,000	7,158	133	60,427
1973	922	230	1,746	1,300	15,527	26,198	2,796	2,168	5,332	7,747	142	64,107
1974	1,006	263	1,838	1,405	16,197	27,852	2,916	2,256	5,647	8,337	150	67,867
1975	1,085	285	1,922	1,498	16,841	29,180	3,019	2,382	5,972	8,871	159	71,214
1976	1,166	298	2,009	1,591	17,574	30,334	3,119	2,560	6,478	9,414	171	74,713
1977	1,238	308	2,092	1,662	18,404	31,506	3,242	2,760	7,137	9,950	183	78,483
1978	1,281	322	2,162	1,718	19,076	32,529	3,384	2,935	7,867	10,411	198	81,882
1979	1,317	339	2,222	1,781	19,572	33,323	3,493	3,092	8,655	10,815	211	84,821
1980	1,363	350	2,264	1,825	19,925	33,841	3,529	3,220	9,328	11,251	220	87,115
1981	1,424	354	2,298	1,847	20,194	34,213	3,534	3,309	9,913	11,774	226	89,085

Source Construction Division, Statistics Canada

(1) Gross Stocks are not calculated but if available would be about 60 percent higher than net stocks.

" not available

Table 3.41

Canada's Housing Stock, by Province, Percentage Change in Levels of Gross Fixed Capital Formation and Net Stocks, 1949 to 1981

Province or Territory	Gross Fixed Capital Formation	Mid-Year Net Stock
	(% Change in 1971 Constant Price Value)	
Newfoundland	732.5	424.3
Prince Edward Island	280.6	341.9
Nova Scotia	127.3	207.0
New Brunswick	126.4	287.5
Quebec	110.4	276.0
Ontario	67.4	271.1
Manitoba	- 3.6	186.3
Saskatchewan	360.3	274.1
Alberta	584.9	675.2
British Columbia	463.2	451.4
Yukon and Northwest Territories (1)	112.8	2203.1
Canada	168.9	310.5

(1) 1956 to 1981

Table 3.42

Residential Gross Rents, 1949-1980

Year	Gross Paid Rents		Gross Imputed Rents		Total Rents	
	Current Prices	1971 Prices	Current Prices	1971 Prices	Current Prices	1971 Prices (1)
	('000,000)					
1949	366.2	668.0	666.4	1215.5	1032.6	1883.5
1950	410.5	684.3	806.3	1343.6	1216.8	2027.9
1951	453.0	719.8	942.6	1497.7	1395.6	2217.5
1952	503.1	757.7	1070.0	1611.3	1573.1	2369.0
1953	555.7	806.3	1213.6	1761.0	1769.3	2567.3
1954	622.9	873.7	1392.7	1953.3	2015.6	2827.0
1955	673.7	921.7	1532.5	2096.7	2206.2	3018.4
1956	710.3	955.3	1644.3	2211.3	2354.6	3166.6
1957	776.4	1027.5	1839.5	2434.4	2615.9	3461.9
1958	833.7	1086.2	2016.5	2627.3	2850.2	3713.5
1959	900.3	1163.9	2196.3	2839.5	3096.6	4003.4
1960	951.2	1224.8	2309.8	2974.5	3261.0	4199.3
1961	1021.8	1314.7	2471.7	3180.5	3493.5	4495.2
1962	1104.0	1414.9	2623.4	3367.3	3727.4	4784.2
1963	1199.1	1534.5	2810.7	3596.9	4009.8	5131.4
1964	1270.4	1618.4	2951.8	3760.6	4222.2	5379.0
1965	1363.3	1726.5	3111.2	3940.2	4474.5	5666.7
1966	1514.4	1893.0	3395.2	4244.0	4909.6	6137.0
1967	1701.2	2069.2	3769.4	4585.4	5470.6	6654.6
1968	1889.9	2219.4	4180.6	4909.4	6070.5	7128.8
1969	2135.5	2360.7	4587.0	5071.3	6722.5	7432.0
1970	2464.7	2575.8	5200.9	5436.9	7665.6	8012.7
1971	2670.9	2670.9	5567.0	5567.0	8237.9	8237.9
1972	2892.2	2801.5	5943.2	5730.3	8835.4	8531.8
1973	3151.8	2921.8	6539.3	5955.1	9691.1	8876.9
1974	3469.0	3049.6	7363.6	6175.1	10,832.6	9224.7
1975	4027.3	3185.1	8510.5	6487.3	12,537.8	9672.4
1976	4499.7	3212.3	9957.9	6908.6	14,457.6	10,120.9
1977	5092.9	3321.7	11,423.9	7255.6	16,516.8	10,577.3
1978	5662.9	3466.7	12,683.2	7537.3	18,346.1	11,004.0
1979	6371.0	3605.8	14,239.6	7823.4	20,610.6	11,429.2
1980	7307.5	3755.7	16,225.1	8121.2	23,532.6	11,876.9

Source Gross National Product Division, Statistics Canada

(1) Linked to 1961 - based constant price series in 1971 and carried back to 1949.

Table 3.43

Average Age of Canada's Non-Residential Capital Stock, Construction Component, by Industry, Selected Years

Industry	1961	1964	1968	1972	1976	1980
Agriculture	15.7	15.9	15.4	16.1	17.1	17.7
Forestry	10.3	11.0	11.8	12.7	13.3	13.5
Fishing	11.0	12.5	13.8	15.1	15.0	10.6
Mining	7.8	8.5	8.4	9.2	10.4	10.4
Food and beverage	18.3	17.8	17.4	17.8	18.2	18.8
Tobacco	18.5	19.1	18.7	20.8	22.4	24.5
Rubber and plastics	19.9	18.7	16.5	14.6	15.1	16.2
Leather	22.5	23.1	24.0	24.7	26.4	27.8
Textiles	23.8	20.4	18.0	18.3	17.1	18.9
Knitting mills	16.4	16.3	16.4	15.8	15.1	14.9
Clothing	17.1	18.8	20.4	18.1	14.0	13.1
Wood products	17.3	16.5	17.4	13.7	11.7	12.0
Furniture and fixtures	18.3	16.5	11.6	11.4	11.8	13.6
Paper and allied industries	25.1	23.2	20.9	19.1	18.8	18.3
Printing, publishing & allied industries	21.3	19.2	18.8	19.0	19.4	18.1
Primary metals	13.4	14.3	15.3	16.1	17.2	19.1
Metal fabricating	16.0	16.8	17.1	18.8	19.3	20.7
Machinery	14.6	13.7	13.6	14.3	14.4	15.3
Transportation equipment	15.9	15.9	14.6	15.4	16.5	16.1
Electrical products	11.9	12.9	12.9	13.7	15.2	17.5
Non-metallic mineral products	18.1	18.2	13.9	14.3	15.1	16.0
Petroleum and coal products	10.6	12.0	12.9	11.9	12.7	15.0
Chemicals and chemical products	23.0	21.4	15.6	13.6	12.8	13.4
Miscellaneous manufactures	13.0	13.2	12.3	12.3	13.1	13.7
Construction	10.1	11.0	12.1	12.5	10.2	9.7
Air transport	7.4	9.9	10.4	8.2	10.1	12.0
Railway transport	34.2	32.8	29.0	27.3	27.0	27.0
Water transport	7.2	9.5	11.3	12.6	15.3	17.6
Motor transport	--	--	--	--	--	14.9
Urban and suburban transport	24.9	21.3	19.0	20.1	18.1	16.6
Pipelines	7.0	8.7	10.5	11.5	13.5	16.1
Toll highways and bridges	3.4	4.9	7.0	10.6	14.4	18.3
Grain elevators	20.2	21.0	20.7	23.4	25.6	25.6
Warehousing	18.1	17.3	14.4	14.9	13.8	14.2
Broadcasting	9.7	10.9	11.9	8.8	8.8	10.0
Telephones	17.8	16.8	15.2	15.3	15.2	15.7
Electric power & gas distribution	14.4	14.7	14.3	14.8	15.2	15.3
Water systems	11.7	12.7	13.2	14.4	15.2	15.5
Trade	18.1	17.5	17.3	18.3	19.0	19.7
Finance, insurance & real estate	14.5	11.3	10.4	10.5	9.9	10.1
Schools	16.4	13.8	12.2	12.4	13.7	15.5
Universities	13.6	10.8	8.7	9.5	12.2	14.7
Hospitals	12.6	12.4	13.1	14.3	15.5	16.7
Other institutions	6.6	7.0	8.3	9.0	10.2	12.2
Churches	21.6	21.6	22.7	25.4	28.0	29.9
Commercial services	23.2	19.7	16.1	15.6	13.2	13.2
Federal government	19.6	20.1	21.0	21.6	23.0	24.4
Provincial governments	15.3	15.1	15.0	14.9	15.7	16.8
Municipal governments	18.1	16.5	15.5	14.9	15.1	15.6

Source Construction Division, Statistics Canada.

Table 3.44

Average Age of Canada's Non-Residential Capital Stock, Machinery and Equipment Component, by Industry, Selected Years

Industry	1961	1964	1968	1972	1976	1980
Agriculture	8.5	8.0	6.3	6.6	6.2	6.6
Forestry	5.4	5.3	4.9	5.2	4.8	5.4
Fishing	6.8	6.0	5.5	6.8	6.8	7.6
Mining	7.5	8.4	9.1	8.7	8.1	8.4
Food and beverage	10.2	11.0	11.5	12.3	12.7	12.7
Tobacco	6.6	6.8	7.3	7.6	7.6	7.6
Rubber and plastics	7.2	7.1	6.7	6.0	6.6	7.8
Leather	9.4	8.8	8.1	7.8	8.0	8.5
Textiles	12.1	12.3	12.5	13.1	11.8	12.3
Knitting mills	10.0	11.1	11.2	9.2	9.4	10.6
Clothing	10.1	10.6	12.2	10.1	9.4	9.8
Wood products	9.5	10.2	11.0	10.3	9.3	9.7
Furniture and fixtures	9.1	9.7	9.9	10.9	10.5	11.7
Paper and allied industries	8.2	9.0	9.3	9.5	10.2	10.4
Printing, publishing & allied industries	11.0	11.6	11.9	12.3	13.1	13.2
Primary metals	9.6	8.7	9.3	9.8	9.7	10.2
Metal fabricating	11.7	9.5	8.7	8.9	9.2	9.8
Machinery	8.6	8.8	9.1	9.3	8.8	8.8
Transportation equipment	10.9	11.5	10.8	11.0	11.9	11.6
Electrical products	8.5	9.5	9.8	9.7	9.5	9.8
Non-metallic mineral products	8.1	9.1	9.7	10.9	10.9	11.4
Petroleum and coal products	10.5	12.7	14.3	15.5	11.1	8.9
Chemicals & chemical products	7.8	8.7	9.0	10.2	8.6	8.1
Miscellaneous manufactures	6.3	6.0	5.7	6.3	6.8	6.8
Construction	5.4	6.0	4.8	5.1	4.9	5.1
Air transport	4.1	5.5	4.4	4.5	5.4	5.0
Railway transport	10.9	12.9	13.1	14.2	14.8	15.0
Water transport	14.0	14.9	16.5	19.1	20.8	16.6
Motor transport	5.0	5.1	5.0	5.0	5.0	5.0
Urban and suburban transport	8.5	7.4	5.0	6.8	4.8	5.3
Pipelines	4.4	5.1	4.8	6.1	7.1	7.7
Toll highways and bridges	3.6	5.5	8.1	9.3	6.6	7.2
Grain elevators	9.6	10.2	9.6	11.3	10.1	8.1
Warehousing	10.9	11.1	9.7	9.5	10.0	11.0
Broadcasting	5.3	5.9	6.1	5.8	5.7	6.9
Telephones	8.2	8.3	8.8	9.4	9.1	9.8
Electric power & gas distribution	10.7	10.9	10.2	9.9	9.8	10.4
Water systems	12.0	12.5	14.4	16.4	15.6	13.0
Trade	7.7	8.7	9.1	9.2	8.7	8.8
Finance, insurance & real estate	6.0	6.3	6.3	6.4	6.3	6.6
Schools	6.7	6.8	6.8	7.7	8.8	10.3
Universities	6.0	5.8	5.0	5.9	7.8	9.6
Hospitals	6.6	6.5	6.4	6.9	7.0	7.5
Other institutions	--	--	6.0	6.1	6.9	8.1
Churches	9.1	10.1	11.6	13.5	14.3	14.5
Commercial services	5.0	4.9	5.1	4.8	4.6	5.3
Federal government	11.9	8.9	8.0	8.2	7.7	8.5
Provincial governments	7.6	7.2	7.0	7.1	6.2	6.8
Municipal governments	9.4	9.9	9.0	8.8	8.3	8.6

Source Construction Division, Statistics Canada.

4. Summary and Conclusions

Because of the richness of the data base relating to Canada's fixed capital flows and stocks and the time available to examine it, this report cannot do justice to it. However the intent was to concentrate on an overview and that is what has been done. A related pervasive difficulty has been the lack of reliable, consistent and/or complete data dealing with other aspects of capital stock, and attempting to close the gap in our knowledge of these aspects has been both time consuming and largely unrewarding. Nevertheless, it is hoped that some additional light has been shed on Canada's capital stock.

(a) Results

Non-residential gross fixed capital stock had increased 663 per cent by 1981 compared with 1926, the first year for which consistent constant price data are available. Over the same time span the price of the aggregate gross stock increased by 754 per cent. The gross stock of the manufacturing industries advanced 507 per cent in constant price terms while the non-manufacturing industries rose 703 per cent. By 1981 non-manufacturing industry gross stock was some 406 per cent higher than manufacturing, i.e., 349,049 million 1971 dollars as opposed to 68,915 million. The predominance of the non-manufacturing sector was clear in all the asset classes as well but particularly so in construction. Building construction gross stock in non-manufacturing

totalled 95,233 million in 1971 dollar terms in 1981 compared with 18,243 million for manufacturing. In the case of engineering construction the comparison was 149,796 to 7,095 and for machinery and equipment it was 103,569 compared with 41,581. Tables 3.2, 3.3 and 3.4 provide a complete record of available gross fixed capital stock data by industry. It is seen in those tables that some industries have shown phenomenal growth since 1926. Some of the more important of these include paper and allied industries (450 per cent), primary metals (838 per cent) transportation equipment industries (433 per cent), petroleum and coal products (1,540 per cent) and chemicals and chemical products (891 per cent) within manufacturing. Some of the most important industries in the non-manufacturing sector to show substantial growth in the 1926 to 1981 period include agriculture (213 per cent), mining (3,047 per cent), telephone service (1,284 per cent), electric power and gas distribution (2,418 per cent), retail and wholesale trade (603 per cent), finance, insurance and real estate exclusive of housing (1,530 per cent), schools (996 per cent), commercial services (1,245 percent), federal government (547 per cent), provincial governments (2,511 per cent) and municipal governments (789 per cent).

The Construction Division of Statistics Canada recently completed a project that resulted in a further industrial breakdown of gross fixed capital stock within manufacturing. These data go back to 1955 and provide further important insight into the industrial distribution of capital stock. Table 3.3

present these data and show the relatively heavy concentration in a few individual industries. These industries include beverages, sawmill, planing and shingle mills, pulp and paper mills, iron and steel mills, smelting and refining, motor vehicle parts, petroleum refineries, and industrial chemicals. Some individual industries show phenomenal growth over the 1966 to 1981 period, while others show little growth or even decline. The table and the data base from which it is drawn provide much needed insight into manufacturing industry capital stock.

Another new set of data has been made available by Statistics Canada commencing with 1955 and provides gross fixed capital flows and stocks data in current and constant prices for the asset classes construction and machinery and equipment on a provincial basis by industry. The total of all industries, manufacturing and non-manufacturing, are available for all provinces, but individual industry detail within provinces in sparse for the smaller provinces because of the confidentiality rules of the Statistics Act. However, there is a wealth of industrial detail available by province, and these data should be of tremendous help in analysing the sources of economic growth and productivity change. Table 3.7 in Section 3 presents a basic overview of the provincial gross stock data. Much more industrial detail is available from the basic data source.

As discussed in Section 3, the service life data used in the estimation of the capital stock series are weak

and may be the cause of some distortion. However the service life data used are the result of careful consideration by Statistics Canada and without a new survey are the best available. The life data available from tax sources are too inconsistent and affected by other than economic considerations to be useful for purposes of capital stock estimation or analysis. Table 3.8 reproduces the service life data used in preparing the fixed capital stock data published by Statistics Canada while Table 3.9 shows Revenue Canada capital cost allowance class rates.

Part (e) of Section 3 reviews the rental of fixed assets. It is found that this aspect of capital stock represents a major problem area because of its relative importance and its rapid growth rate. It is particularly troublesome because it raises serious doubts about the adequacy of the concept of ownership now used in the official stock estimates for those users wishing to adopt a users' concept. Insofar as ownership and use of rented capital assets remain in the same industry in the same country no distortion arises. But it is clear that this is not the case.

An overview of gross rents for 1976 is derived from the Input-Output tables prepared by Statistics Canada. Results are summarized in Table 3.10. It is suggested that the assets underlying these gross rent data could make up as much as 15 per cent of Canada's gross fixed non-residential capital stock. Thus the industrial distribution of gross rents paid as intermediate input and gross rents received needs to be carefully considered in the

preparation and analysis of capital/output ratios. Table 3.11 presents the above comparison for industries paying or receiving in excess of $10 million in 1976. It is clear that there is a considerable difference between the two industrial distributions. While gross rents paid is widely distributed across industry, the receipt of gross rents is heavily concentrated in a few industries, especially in the insurance and other finance, insurance and real estate (exclusive of housing) industries.

Tables 3.12 and 3.13 take a look at constant dollar trends of gross rents paid and received by industry over the 1971 to 1977 period. It can be seen that quite a number of industries sharply increased their constant dollar intermediate input of gross rents over the period. On the other hand there was a growing concentration of gross rents received by the insurance and other finance, insurance and real estate industries.

Tables 3.14 to 3.18 examine some of the related information available for asset rentals. Most of these data are incomplete in terms of coverage but, nevertheless, they provide an overview of the length of rental contract terms, ownership of corporations leasing assets, the type of equipment leased and purchased for leasing, the provincial distribution of finance leasing and the type of financial intermediaries most heavily involved. Unfortunately all these data are based on corporations as opposed to establishment data used in the input-output tables,

in the Real Domestic Product measures and in other key industry data such as prices, employment and capital flows and stocks.

The relatively recent phenomenon of concern over the effects of industrial pollution of the environment has led to substantial capital expenditures by industry and governments to control and abate pollution. Part (f) of Section 3 provides an examination of available data for Canada and the United States. Tables 3.19 to 3.23 provide an overview of capital expenditures by province and by industry on air and water pollution abatement. Three different data sources are used with each having a different coverage. Tables 3.19 to 3.21 explore the results of a now discontinued Statistics Canada survey while Table 3.22 presents taxation data from Revenue Canada for relevant tax classes. Table 3.23 on the other hand presents overall results from the Industry, Trade and Commerce Department's Large Firm Survey. The latter source in particular provides an indication of the size and growing importance of pollution abatement costs.

With the collection of pollution abatement cost data so limited and uncoordinated it was found useful to look at data for the United States. Table 3.24 presents an overview of these data and the text describing the U.S. set of data gives a number of relevant references. It is interesting to note that in the United States about 4 per cent of new fixed capital formation by business is directly related to pollution abatement. On the other hand total U.S. expenditures on current and capital account by businesses, consumers and governments amounted to 2 per cent of U.S. G.N.P. An equivalent value for Canada would

be substantially higher than that reported by the three Canadian sources noted above. A good understanding of the amount of capital stock devoted to pollution abatement in Canada thus awaits a more structured and comprehensive approach to data collection in this area. Again, without such data, it is difficult to reach any definite conclusions as to the effect of such capital expenditures on changes in capital/output ratios and on the relative efficiency of gross fixed capital stock in the production process.

Part (g) of Section 3 deals with investment from the point of view of country of control. Data for manufacturing, mining and forestry are presented in Table 3.25 and for total manufacturing by province in Table 3.26. The data are not available for enough years to calculate gross fixed capital stock data by country of control but the data are interesting just the same. Foreign controlled investment predominates in the transportation equipment, non-metallic mineral products, petroleum and coal products, chemical and allied industries and petroleum and gas mining industries. Foreign control investment is also predominant in the provinces of Ontario and Alberta.

Table 3.27 provides data on overall foreign long-term direct investment in Canada. This set of data contains more than just investment in fixed capital but nevertheless provides an overview of foreign investment trends over the past three decades.

In part (h) of Section 3 a variety of capital related data are drawn together both to provide additional insight into Canada's capital and to illustrate some of the related data that now exist or could be prepared if such data are found to be useful. Tables 3.28 to 3.30 present related data for agriculture, forestry and fisheries while Tables 3.31 to 3.36 provide some transportation related data.

Part (i) brings together some of the available data for residential stocks and housing gross rents. Tables 3.37 to 3.39 provide information on the number of single and multiple dwellings, the number owned as opposed to rented both for Canada and the provinces and territories over the 1949 to 1980 time period. The numbers of mobile homes and cottages are also given. Of particular interest is the increase in the number of multiples and mobile homes and in the number of rented dwellings as opposed to owned dwellings. From a regional point of view, the shift since 1949 in dwellings to Ontario, Quebec, Alberta, British Columbia and the Territories is striking as is the shift to multiples and rented accommodation in all provinces except Quebec and New Brunswick. The shifts in the western provinces are particularly large.

Tables 3.40 and 3.41 show the constant 1971 dollar value of the net stock of dwellings for Canada, the provinces and territories over the past three decades. By 1981 the constant dollar value of residential net stocks was about one-third the value of

non-residential net stocks. Such a value is much too large to ignore in dealing with national capital/output ratios. Table 3.41 highlights the phenomenal growth in the constant price value of net residential stocks, particularly in Newfoundland, Alberta, British Columbia and the Territories.

Table 3.42 presents gross rents paid and imputed as contained in Canada's National Accounts. Total gross rents show a quantity increase of 531 per cent from 1949 to 1980 as compared with a 148 per cent increase in the number of dwellings. The difference is due to quality changes such as size of dwellings and the number of amenities. There is some controversy as to the most appropriate approach to the measurement of the quality of Canada's housing stock. Hopefully this will soon be settled, thus making it possible to prepare a consistent set of residential and non-residential fixed flows and stock data for Canada and the provinces and Territories on an industry basis.

In part (j) and Tables 3.43 and 3.44 some newly available data on the average age of Canada's non-residential fixed capital stock are given. These data provide an industrial breakdown of average age for the construction and machinery and equipment components of the capital stock. The results, provided over a period of twenty years, indicate trends that are highly relevant to an interpretation of the adequacy of recent new investment expenditures. The capital stock of many industries is aging,

some fairly rapidly, while other industries are achieving gains in acquiring newer plant and equipment. It might be reasonably assumed that aging industries are becoming relatively inefficient, while industries with a declining average age of capital stock are more dynamic and becoming relatively more efficient and competitive. These assumptions should be carefully evaluated in the light of related data.

Of the industries to show a trend towards new plant and equipment, the ones with the largest shifts include chemicals and chemical products, commercial services, urban and sub-urban transportation, paper and allied industries, textiles, clothing, wood products, furniture, railways, warehousing, and finance, insurance and real estate. Among the industries showing a substantial aging of capital stock are tobacco, leather, primary metals, metal fabricating, electrical products, petroleum and coal products, air transport, water transport, pipelines, water systems, and hospitals.

(b) Remaining Gaps in Knowledge

A number of important gaps in our knowledge remain. Even where data have been obtained for purposes of this report, some significant questions of consistency, relevancy and coverage may remain. The following then is a brief summary of some of these gaps.

Perhaps the most important gap is that represented by the problem of the owner versus the user of fixed capital. The leasing of capital assets to users in other industries and even other countries causes substantial problems for those wishing to use a "users" concept of capital stock as opposed to the "owners" concept now used in the official stock statistics. Asset rentals are very important and rapidly becoming more so. Distortions in time series of capital stock and in so-called capital/output ratios can be large, due to changing leasing practices. This report provides some insight into this problem but the data base available is incomplete and inconsistent, especially in regard to establishment-based industry output measures.

There is a need to know more about the causes of capital substitution. For example, how much capital expenditure has been related to increasing energy costs? How much is related to the abatement of environmental pollution? And of the latter, how much is due to government regulation?

Information concerning the economic life and average vintage of Canada's capital stock is very weak. It would be useful to know more about these areas and to sharply expand the "product" detail of asset classes, such as construction and machinery and equipment, in the process.

Country of control of Canada's gross fixed capital stock would be useful to have information, especially if carried through to

the industry and provincial detail of gross fixed capital flows and stocks. Such information would permit an analysis of relative technologies and performance in important industries of mixed control.

Another gap is found in the lack of information on the sales and purchases of second-hand assets which can cause inconsistencies in the stock time series where these sales or purchases cross industry lines. Still another is the lack of information needed to adjust the stock series for sudden losses or destruction due to fire and other eccentricities of nature.

A pervasive problem is the weakness of the price indexes used in the estimation of current and constant price fixed capital flows and stocks. The problem is particularly serious in the case of building and engineering construction. It is well known that this is a difficult area of statistical development but its lack of resolution has profound impact throughout the capital flows and stocks data, as well as on a number of other important related economic time series.

The official statistics for fixed capital flows and stocks exclude residential or housing capital. Thus there is a great need to develop an official set of residential capital flows and stocks data that can be directly tied into or added to the non-residential fixed capital data now available at the industry and provincial levels of detail. This would place the flows and

stocks data on a level that would be more consistent with production, employment and other such industry-oriented data.

It also seems important that alternative concepts of capital be explored and, in particular, that the scope of measured capital be expanded. There are a number of extensions that would yield data that would be directly or indirectly useful in explaining economic growth and productivity. Among the candidates for inclusion in any extended measure of capital would be the accumulated costs of investment in humans such as their upbringing, education, training, health and safety, and in basic research and development, the value of proven sub-soil or other natural resources, and even financial capital, especially where such capital is an industry's basic productive force as in the case of financial intermediaries. There is even the question of whether special estimates should be made for the indirect use of capital owned by governments. For example the trucking industry and indeed all industries to some extent use public roads and highways and benefit in terms of productive efficiency, from their use. How important this area might be is unknown and of course it extends to other publicly-owned assets such as waterways and water systems as well.

Land represents a particular class of problem that should be reviewed at some point to determine the adequacy of present practices. For example, improved agricultural land, restocked forests or commercial fisheries, and other private or public

expenditures to improve natural resource capability might be re-examined.

Finally, it would be useful to have data on current government expenditures that could reasonably be thought of as fixed capital. In particular the area of defence spending on plant and equipment could be included in an extended concept of capital.

(c) Direction of Further Work

There are some data areas where relatively short-run additional work could result in further useful insight into the structure of Canada's capital stock and the underlying reasons for changes in this structure. The following suggestions represent an initial start on such a list based on problems encountered in preparing this report. Other researchers should be canvassed as well for their views.

(i) A survey of large energy users. This could be based on a mixture of interviews and questionnaires. The purpose would be to determine the extent of capital substitution brought about by the sharply increasing prices of energy.

(ii) A survey of large companies to derive better data on the economic life of assets, the average vintage of assets owned or used, and as a first step in expanding the detail of asset classes. A further question that might be

explored in such a survey is that of pollution abatement costs - particularly the separation of such costs from the costs of introducing new technology.

(iii) The implications of owner versus user analysis of capital require sorting out within an overall framework of capital. In particular, the increasing use of leased assets needs to be studied more fully. Present inconsistencies in capital stock time series could be large, due to leasing but not enough information is available to evaluate the problem.

(iv) Statistics Canada might be asked to undertake a number of long-term basic data improvements relating to non-residential capital stock. It could, for example, be asked to develop a more complete and establishment-consistent set of country of control statistics. As well it should be asked to continue, with all possible speed, its program of developing better construction "product" price indexes as a means of improving the quality of the current and constant price fixed capital flows and stocks. Finally it should be asked to complete its work on residential fixed capital and to tie these data in with the non-residential data.

(v) There is a need to reach a consensus on a conceptual framework for capital flows and stocks. This framework should cover both residential and non-residential fixed

capital flows and stocks as well as an extended view of capital as discussed earlier in this report.

Table 4.1

Percentage Increase in Constant Price Provincial Gross Fixed Capital Stock, Excluding Housing, 1955 to 1981

Province	Total	Manufacturing	Non-manufacturing
Newfoundland	502	766	483
P.E.I.	138	218	136
Nova Scotia	203	376	180
New Brunswick	194	317	177
Quebec	251	190	267
Ontario	237	223	241
Manitoba	180	197	179
Saskatchewan	164	217	162
Alberta	383	309	391
British Columbia	309	222	330